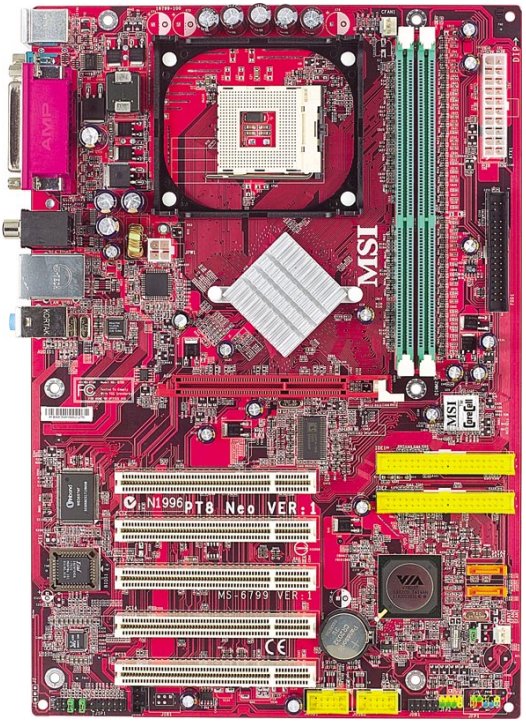
PT8 Neo Series

MS-6799 (v1.X) ATX Mainboard



Version 1.1

G52-M6799X4

Manual Rev: 1.1
Release Date: Nov. 2003

CE N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Micro-Star International MS-6799

FC **Tested to comply with FCC Standard**

For Home or Office Use

Copyright Notice

The material in this document is the intellectual property of **MICRO-STAR INTERNATIONAL**. We take every care in the preparation of this document, but no guarantee is given as to the correctness of its contents. Our products are under continual improvement and we reserve the right to make changes without notice.

Trademarks

All trademarks are the properties of their respective owners.

Intel® and Pentium® are registered trademarks of Intel Corporation.
AMD, Athlon™, Athlon™ XP, Thoroughbred™, and Duron™ are registered trademarks of AMD Corporation.
PS/2 and OS®/2 are registered trademarks of International Business Machines Corporation.
Windows® 95/98/2000/NT/XP are registered trademarks of Microsoft Corporation.
Netware® is a registered trademark of Novell, Inc.
Award® is a registered trademark of Phoenix Technologies Ltd.
AMI® is a registered trademark of American Megatrends Inc.

Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X	Sep. 2003
V1.1	Second release for PCB 1.X	Nov. 2003

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: **http://www.msi.com.tw/**
- Contact our technical staff at: **support@msi.com.tw**

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged.
    - The equipment has obvious sign of breakage.
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0C (140^0F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

CONTENTS

FCC-B Radio Frequency Interference Statement iii
Copyright Notice iii
Revision History iii
Technical Support iii
Safety Instructions iv
Chapter 1. Getting Started 1-1
Mainboard Specifications 1-2
Mainboard Layout 1-4
MSI Special Features 1-5
Color Management 1-5
Core Center 1-6
Live BIOS™/Live Driver™ 1-8
Live Monitor™ 1-9
D-Bracket™ 2 (Optional) 1-10
Round Cable (Optional) 1-12
S-Bracket (Optional) 1-13
CPU Thermal Protection 1-13
Chapter 2. Hardware Setup 2-1
Quick Components Guide 2-2
Central Processing Unit: CPU 2-3
CPU Core Speed Derivation Procedure 2-3
Memory Speed/CPU FSB Support Matrix 2-3
Memory 2-4
Introduction to DDR SDRAM 2-4
DDR DIMM Module Combination 2-4
Installing DDR Modules 2-5
Back Panel / Power Supply 2-6
Back Panel Overview 2-6
ATX 20-Pin Power Connector: ATX1 2-6

ATX 12V Power Connector: JPW1 2-6
Connectors 2-7
Floppy Disk Drive Connector: FDD1 2-7
Fan Power Connectors: CFAN1/SFAN1/SFAN2 2-7
Hard Disk Connectors: IDE1/IDE2 2-8
Serial ATA HDD Connectors: SATA1/SATA2 (Optional) 2-9
CD-In Connector: CD1 2-9
Front Panel Connectors: JFP1/JFP2 2-10
Front USB Connectors: JUSB1/JUSB2 2-10
Front Panel Audio Connector: JAUD1 2-11
D-Bracket™ 2 Connector: JDB1 2-12
S-Bracket (SPDIF) Connector: JSP1 (Optional) 2-13
Jumpers 2-14
Clear CMOS Jumper: JBAT1 2-14
Slots 2-15
AGP (Accelerated Graphics Port) Slot 2-15
PCI (Peripheral Component Interconnect) Slots 2-15
PCI Interrupt Request Routing 2-15
Chapter 3. BIOS Setup 3-1
The Main Menu 3-2
Standard CMOS Features 3-5
Frequency/Voltage Control 3-6
Load High Performance/Optimized Defaults 3-9
Set Supervisor/User Password 3-10
AppendixA. Using 4- or 6-Channel Audio Function A-1
AppendixB. VIA VT8237 Serial ATA RAID Introduction B-1

Getting Started

Thank you for choosing the PT8 Neo Series (MS-6799 v1.X) ATX mainboard. The PT8 Neo is based on **VIA® PT800** & **VT8237** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium® 4** processors in 478 pin package, the PT8 Neo delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports Intel® P4 Northwood (Socket 478) processor。
- FSB @ 400/533/800 MHz.
- Supports up to 3.2GHz or higher speed.

Chipset

- VIA® PT800 chipset
  - Supports FSB 800/533/400MHz。
  - Supports AGP 8X interface。
  - Supports DDR 400/333/266 memory interface.
- VIA® VT8237 chipset
  - High Bandwidth V-link Client controller
  - Integrated Faster Ethernet LPC
  - Integrated Hardware Sound Blaster/Direct Sound AC97 audio
  - Ultra DMA 66/100/133 master mode PCI EIDE controller
  - ACPI
  - Supports Serial ATA RAID0/1
  - Supports USB2.0

Clock Generator

- 100/133/200 MHz clocks are supported

Main Memory

- Supports four memory banks using two 184-pin DDR DIMMs.
- Supports up to 2GB DDR 400/333/266 SDRAM.
- Supports 2.5v DDR SDRAM.

Slots

- One AGP (Accelerated Graphics Port) slot supports 8x/4x at 0.8V (AGP 3.0) or 4x at 1.5V (3.3V not supported).
- Five 32-bit Master PCI bus slots (support 3.3v/5v PCI bus interface).

On-Board IDE

- An IDE controller integrated in the VIA® VT8237 chipset。
  - Supports IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66/100/133 operation modes。
  - Can connect up to four Ultra ATA drives.
- Serial ATA/150 controller integrated in VIA® VT8237 chipset. (Optional)
  - Up to 150MB/sec transfer rate.

- Can connect up to two Serial ATA drives.

USB Interface

➤ 8 USB ports
- Controlled by VT8237 southbridge
- 4 ports in the rear I/O, 4 ports via the external bracket

On-Board Peripherals

➤ On-Board Peripherals include:
- 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 1 serial ports (COM A)
- 1 RCA SPDIF Out
- 1 parallel port supports SPP/EPP/ECP mode
- 8 USB 2.0 ports (Rear x 4 / Front x 4)
- 1 audio (Line-In/Line-Out/Mic) port
- 1 RJ45 LAN jack (Optional)
- 1 D-Bracket2 pinheader
- 1 S-Bracket pinheader

Audio

➤ AC97 link controller integrated in VT8237。
➤ 6-channel software audio codec Realtek 655.
- Compliance with AC97 v2.2 Spec.
- Meets PC2001 audio performance requirement.
- Can support SPDIF-Out via rear RCA SPDIF Out connector

LAN (Optional)

➤ VIA8237 integrated MAC + Realtek 8201BL PHY
➤ 10/100 RJ45 LAN connector

BIOS

➤ The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
➤ The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

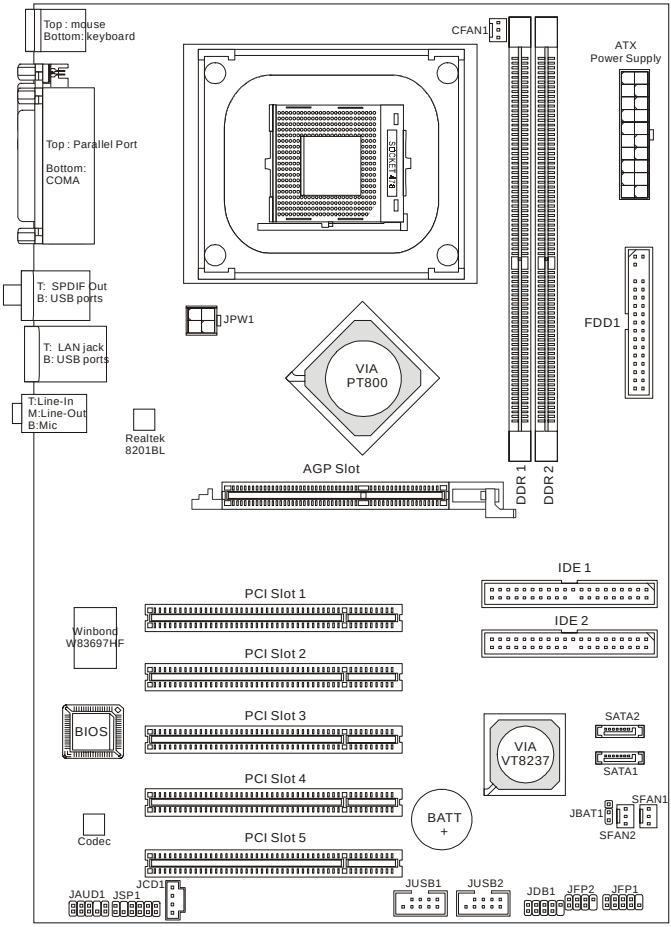
Dimension

➤ ATX Form Factor: 30.5cm x 21cm。

Mounting

➤ 6 standard mounting holes.

Mainboard Layout



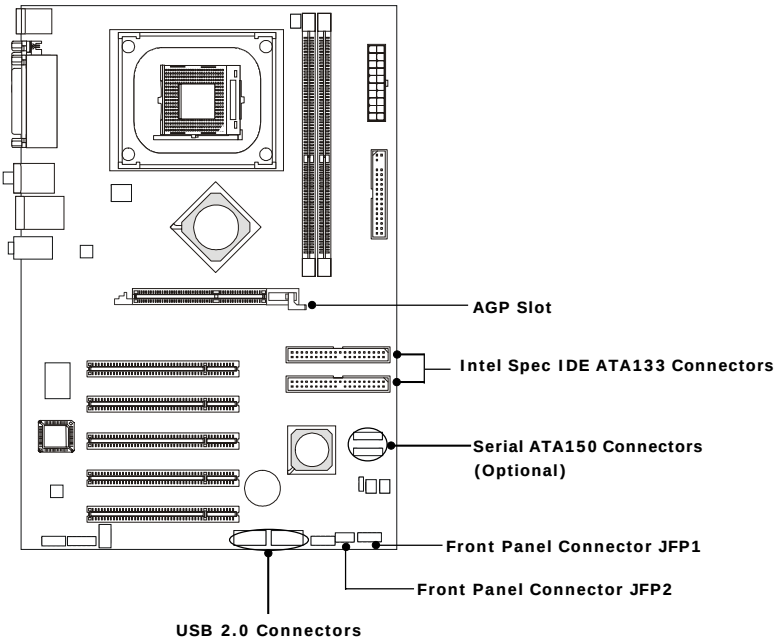
PT8 Neo Series (MS-6799 v1.X) ATX Mainboard

MSI Special Features

Color Management

MSI has a unified color management rule for some connectors on the mainboards, which helps you to install the memory modules, expansion cards and other peripherals devices more easily and conveniently.

- Intel spec IDE ATA133 connector: yellow
- Serial ATA150 connector: orange
- AGP 8X slot: red
- USB 2.0 connector: yellow
- Front panel connector JFP1: HDD LED in red, Reset Switch in blue, Power Switch in black, Power LED in light green.
- Front panel connector JFP2: Power LED in light green.



CoreCenter

CoreCenter (TM)- contains OC Menu panel, users can determine their processor and memory type to optimize its memory capacity. This all-in-one hardware console is advanced combination of the popular PC Alert and Fuzzy Logic. Including powerful function with hardware monitor, system alert and instinctive UI of overclocking, CoreCenter is just like your PC doctor that can detect, view and adjust the PC hardware and system status during real time operation.

In the left side it shows the current system status including the Vcore, 3. 3V, +5V and 12V. In the right side it shows the current PC hardware status such as the CPU & system temperatures and all fans speeds.

When you click the red triangles in the left and right sides, two sub-menus will open for users to overclock, overspec or to adjust the thresholds of system to send out the warning messages. If you click the ***Core Center*** button in the top, a screen pops up for you to choose the "***Auto mode***" or "***User mode***" of CPU fan.

Left-wing: Current system status

In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button in front of each item and make it available (the radio button will be lighted as yellow when selected), use the "+" and "-" buttons to adjust, then click ***"OK"*** to apply the changes. Then you can click ***Save*** to save the desired FSB you just configured.

Also you may click ***Auto*** to start testing the maximal CPU overclocking value, The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click ***Default*** to restore the default values.

Right-wing: PC hardware status during real time operation

In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click ***"OK"*** to apply the changes. The values you set for the temperatures are the maximum thresholds for the system for warnings, and the value for fan speeds are the minimum thresholds.

Top-side: User mode/Auto mode

Here you may adjust the CPU fan speed. If you choose ***User mode***, you may adjust the CPU fan speed in 8 different modes, from **Stop** to **Full speed**.

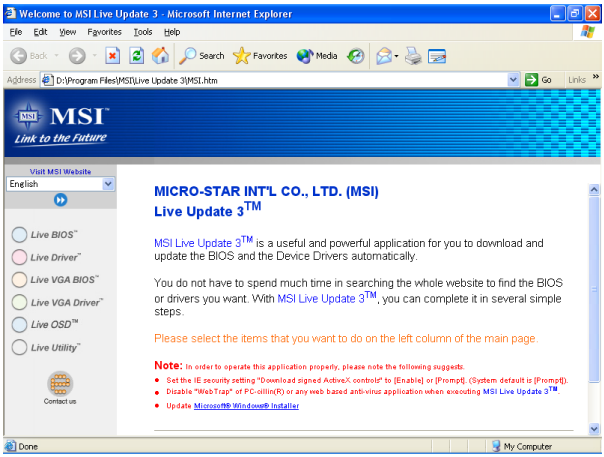
OC Menu

The exclusive OC Menu is fully developed to support DDR400+ memory modules. By comprehensive validation of over 67 DDR400+ memory modules, MSI concluded best parameters for DRAM voltage, Vio and other BIOS settings. You can select DDR433, DDR450, DDR466 and DDR500 from DRAM frequency in BIOS setting. Or you can just click on **OC Menu** button to configure in the OC Menu at CoreCenter. OC Menu will adjust the necessary parameters of voltage and frequency simultaneously. The only limitation was the margin of processor from overclocking.

Live BIOS™/Live Driver™

The Live BIOS™/Live Driver™ is a tool used to detect and update your BIOS/drivers online so that you don't need to search for the correct BIOS/driver version throughout the whole Web site. To use the function, you need to install the "MSI Live Update 3" application. After the installation, the "MSI Live Update 3" icon (as shown on the right) will appear on the screen.

Double click the "MSI Live Update 3" icon, and the following screen will appear:


Welcome to MSI Live Update 3 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address D:\Program Files\MSI\Live Update 3\MSI.htm
MSI
Link to the Future
Visit MSI Website
English
Live BIOS™
Live Driver™
Live VGA BIOS™
Live VGA Driver™
Live OSD™
Live Utility™
Contact us
MICRO-STAR INT'L CO., LTD. (MSI)
Live Update 3™
MSI Live Update 3™ is a useful and powerful application for you to download and update the BIOS and the Device Drivers automatically.
You do not have to spend much time in searching the whole website to find the BIOS or drivers you want. With MSI Live Update 3™, you can complete it in several simple steps.
Please select the items that you want to do on the left column of the main page.
Note: In order to operate this application properly, please note the following suggests.
Set the IE security setting "Download signed ActiveX controls" to [Enable] or [Prompt]. (System default is [Prompt]).
Disable "WebTrap" of PC-cillin(R) or any web based anti-virus application when executing MSI Live Update 3™.
Update Microsoft® Windows® Installer
Done
My Computer

Six buttons are placed on the left column of the screen. Click the desired button to start the update process.

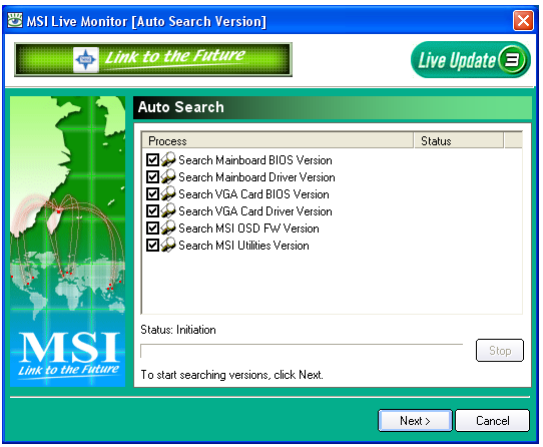
- **Live BIOS** – Updates the BIOS online.
- **Live Driver** – Updates the drivers online.
- **Live VGA BIOS** – Updates the VGA BIOS online.
- **Live VGA Driver** – Updates the VGA driver online.
- **Live OSD** – Updates the firmware of the OSD products online.
- **Live Utility** – Updates the utilities online.

If the product you purchased does not support any of the functions listed above, a "sorry" message is displayed. For more information on the update instructions, insert the companion CD and refer to the "Live Update Guide" under the "Manual" Tab.

Live Monitor™

The Live Monitor™ is a tool used to schedule the search for the latest BIOS/drivers version on the MSI Web site. To use the function, you need to install the "MSI Live Update 3" application. After installation, the "MSI Live Monitor" icon (as shown on the right) will appear on the screen. Double click this icon to run the application.

Double click the "MSI Live Monitor" icon at the lower-right corner of the taskbar, and the following dialog box will appear. You can specify how often the system will automatically search for the BIOS/drivers version, or change the LAN settings right from the dialog box.



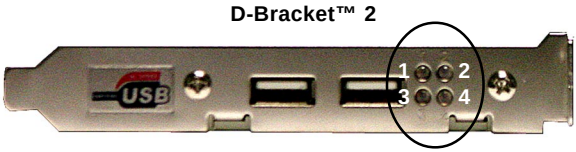
You can right-click the MSI Live Monitor icon to perform the functions listed below:

- **Auto Search** – Searches for the BIOS/drivers version you need immediately.
- **View Last Result** – Allows you to view the last search result if there is any.
- **Preference** – Configures the Search function, including the Search schedule.
- **Exit** – Exits the Live Monitor™ application.
- **FAQ** – Provides a link to a database which contains various possible questions about MSI's products for users to inquire.

D-Bracket™ 2 (Optional)

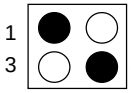
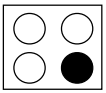
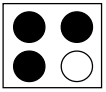
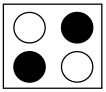
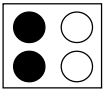
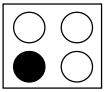
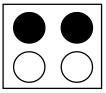
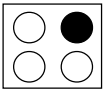
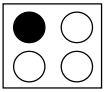
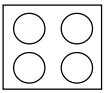
D-Bracket™ 2 is an external USB bracket integrating four Diagnostic LEDs, which use graphic signal display to help users understand their system. The LEDs provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.

D-Bracket™ 2 supports both USB 1.1 & 2.0 spec.



● **Red** ○ **Green**

D-Bracket™ 2	Description
1 2 3 4 ● ● ● ●	System Power ON - The D-LED will hang here if the processor is damaged or not installed properly.
○ ● ●	Early Chipset Initialization
● ○ ●	Memory Detection Test - Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.
○ ○ ● ●	Decompressing BIOS image to RAM for fast booting.
● ● ○ ●	Initializing Keyboard Controller.
○ ● ○ ●	Testing VGA BIOS - This will start writing VGA sign-on message to the screen.

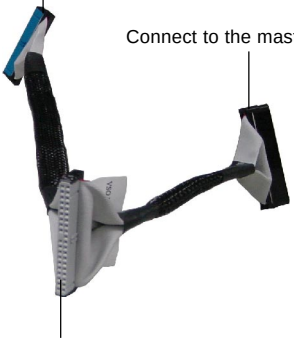
D-Bracket™ 2	Description
	Processor Initialization - This will show information regarding the processor (like brand name, system bus, etc...)
	Testing RTC (Real Time Clock)
	Initializing Video Interface - This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
	BIOS Sign On - This will start showing information about logo, processor brand name, etc...
	Testing Base and Extended Memory - Teting base memory from 240K to 640K and extended memory above 1MB using various patterns.
	Assign Resources to all ISA.
	Initializing Hard Drive Controller - This will initialize IDE drive and controller.
	Initializing Floppy Drive Controller - This will initialize Floppy Drive and controller.
	Boot Attempt - Thi will set low stack and boot via INT 19h.
	Operating System Booting

Round Cable (Optional)

Round cable is an enhanced cable for PCI IDE and Ultra DMA controller. It has the following benefits:

- Data transfer rate started by 133MB/s
- Backward compatibility (ATA33/66/100/133)
- Higher performance than traditional Flat cable (data rate)
- Improved data robustness
- Better airflow due to thinner ATA/133 cable

Connect one end to the floopy disk drive connector (FDD1) and the other end to the standard flooy disk.



Connect to the system connectors on the mainboard.

Connect to the master drive.

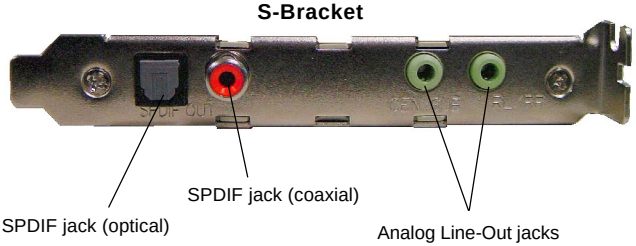
Connect to the slave drive.

S-Bracket (Optional)

S-Bracket is a bracket which provides 2 SPDIF jacks for digital audio transmission and 2 analog Line-Out connectors for additional 4-channel analog audio output. With the S-Bracket, your system will be able to perform 6-channel audio operation for wonderful surround sound effect, or connect to Sony & Philips Digital Interface (SPDIF) speakers for audio transmission with better quality.

The S-Bracket offers two types of SPDIF connectors: one for optical fiber and the other for coaxial connection. Select the appropriate one to meet your need. For more information on S-Bracket, refer to *Appendix. Using 4- or 6-Channel Audio Function*.

S-Bracket



CPU Thermal Protection

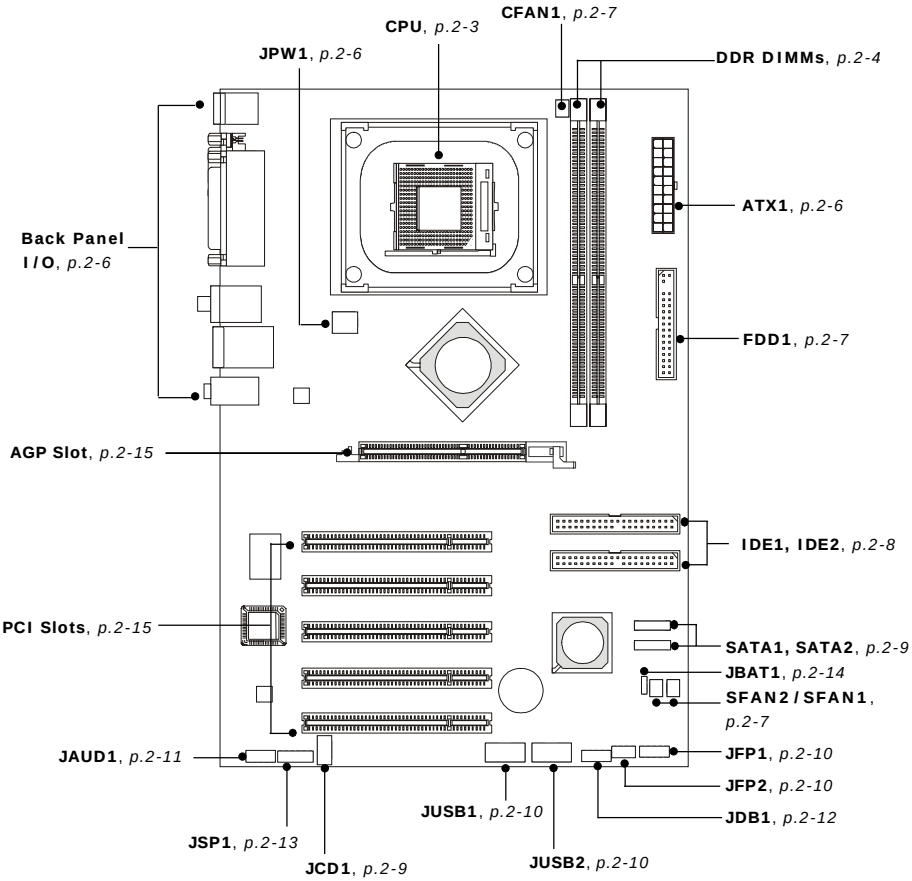
Aimed to prevent the CPU from overheating, MSI has developed a CPU Thermal Protection mechanism for Intel® CPU platform. This CPU Thermal Protection mechanism works on a thermal signal sensor. If the mechanism senses an abnormal temperature rise, it will automatically shut down the system and the CPU temperature will then drop down and resume normal. With this unique feature, users can better protect their CPU. Please note that this feature is for Intel® Pentium CPU only.

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 processors in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

CPU Core Speed Derivation Procedure

If	CPU Clock	=	200MHz
	Core/Bus ratio	=	12
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	200MHz x 12
		=	2.4GHz

Memory Speed/CPU FSB Support Matrix

Memory / FSB	DDR 266	DDR 333	DDR 400
400 MHz	OK	OK	N/A
533 MHz	OK	OK	OK
800 MHz	N/A	OK	OK

MSI Reminds You...

Overheating

Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Overclocking

This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Memory

The mainboard provides 2 slots for 184-pin, 2.5V DDR DIMM modules and supports the memory size up to 2 GB without ECC,. You can install DDR266/ DDR333/DDR400 DDR SDRAM modules on the DDR DIMM slots. To operate properly, at least one DIMM module must be installed.

DIMM1-2

Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. Three types of DDR are available at the time of writing: DDR266, DDR333 & DDR400. DDR266 DDR SDRAM running at 133MHz will produce about 1.6GB/s memory bandwidth. DDR333 running at 166MHz will produce 2.1GB/s memory bandwidth. DDR400 is also available with bandwidith up to 3.2GB/s for single-channel mode or with 6.4GB/s for dual-channel mode. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

DDR DIMM Module Combination

Install at least one DIMM module on the slots. Memory modules can be installed on the slots in any order. You can install either single- or double-side modules to meet your own needs.

Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
Maximum System Memory Supported		64MB~2GB

S: Single Side **D: Double Side**

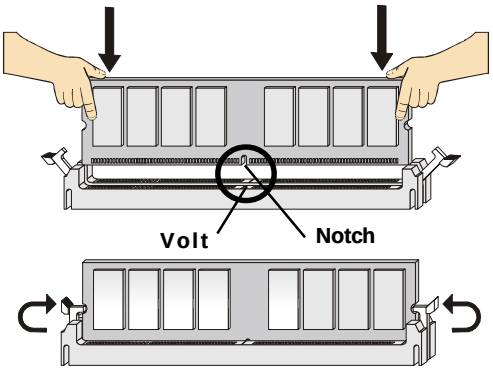
Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.

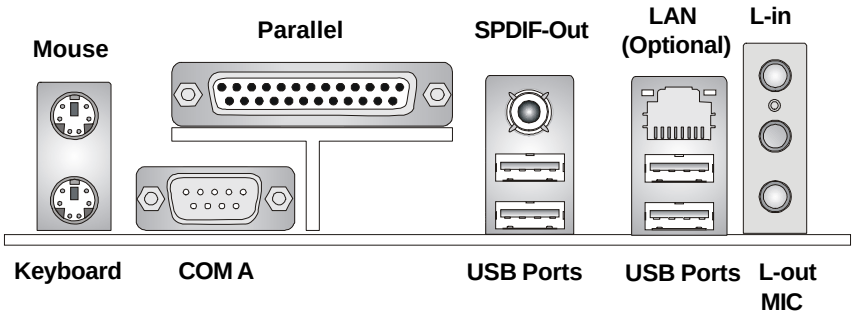
MSI Reminds You...
You can barely see the golden finger if the module is properly inserted in the socket.

3. The plastic clip at each side of the DIMM slot will automatically close.



Back Panel / Power Supply

The back panel provides the following connectors:



ATX 20-Pin Power Connector: ATX1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

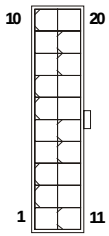
ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

JPW1

JPW1 Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V



ATX1

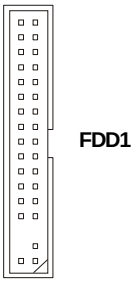
ATX1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

Connectors

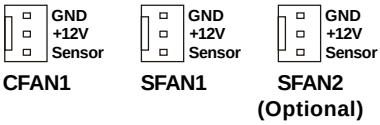
Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



Fan Power Connectors: CFAN1/SFAN1/SFAN2

The CPUFAN1 (processor fan), SFAN1, and SFAN2 (system fan) support system cooling fan with +12V. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



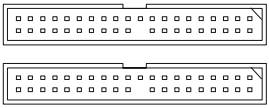
MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.

2. CFAN1 supports the fan control. You can install the PC Alert utility that will automatically control the CPU fan speed according to the actual CPU temperature.

ATA133 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~5, Bus Master, and Ultra DMA 33/66/100/133 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy and other devices. These connectors support the provided IDE hard disk cable.



IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

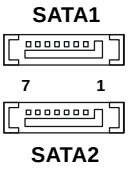
IDE2 can also connect a Master and a Slave drive.

MSI Reminds You...

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

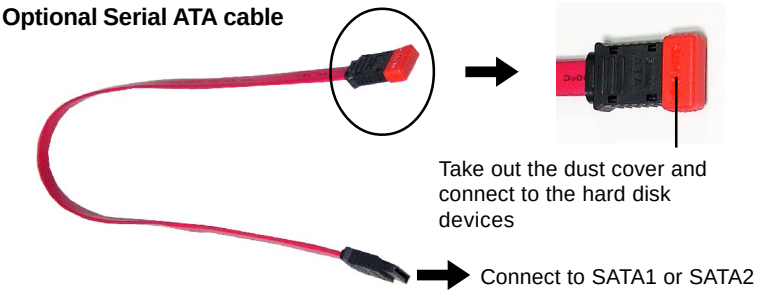
Serial ATA HDD Connectors: SATA1, SATA2 (Optional)

The mainboard provides dual high-speed Serial ATA interface ports. The ports support 1st generation Serial ATA data rates of 150MB/s and are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk drive.



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

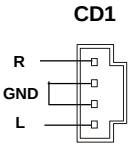


MSI Reminds You...

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, the loss of data may occur during transmission.

CD-In Connector: CD1

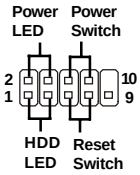
The connector is for CD-ROM audio connector.



Front Panel Connectors: JFP1 & JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

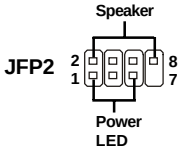
JFP1



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

JFP2

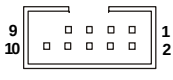


JFP2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+

Front USB Connectors: JUSB1 & JUSB2

The mainboard provides two USB 2.0 pin headers *JUSB1* & *JUSB2* that are compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.



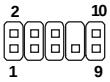
JUSB1 / JUSB2

Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



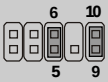
JAUD1

JAUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

MSI Reminds You...

If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.



D-Bracket™ 2 Connector: JDB1

The mainboard comes with a JDB1 connector for you to connect to D-Bracket™ 2. D-Bracket™ 2 is a USB Bracket that supports both USB1.1 & 2.0 spec. It integrates four LEDs and allows users to identify system problem through 16 various combinations of LED signals. For definitions of 16 signal combinations, please refer to *D-Bracket™ 2* in *Chapter 1*.

JDB1

JDB1 Pin Definition

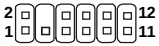
Pin	Signal
1	DBG1 (high for green color)
2	DBR1 (high for red color)
3	DBG2 (high for green color)
4	DBR2 (high for red color)
5	DBG3 (high for green color)
6	DBR3 (high for red color)
7	DBG4 (high for green color)
8	DBR4 (high for red color)
9	Key
10	NC

Depending on the optional bracket you buy, please note there might be a Bluetooth Sticker to cover one of the port, which marks "***Do no remove, when using bluetooth".***

S-Bracket (SPDIF) Connector: JSP1 (Optional)

The connector allows you to connect a S-Bracket for Sony & Philips Digital Interface (SPDIF). The S-Bracket offers 2 SPDIF jacks for digital audio transmission (one for optical fiber connection and the other for coaxial), and 2 analog Line-Out jacks for 4-channel audio output.

To attach the fiber-optic cable to optical SPDIF jack, you need to remove the plug from the jack first. The two SPDIF jacks support *SPDIF output* only. For more information on the S-Bracket, refer to *Appendix: Using 4- or 6-Channel Audio Function*.

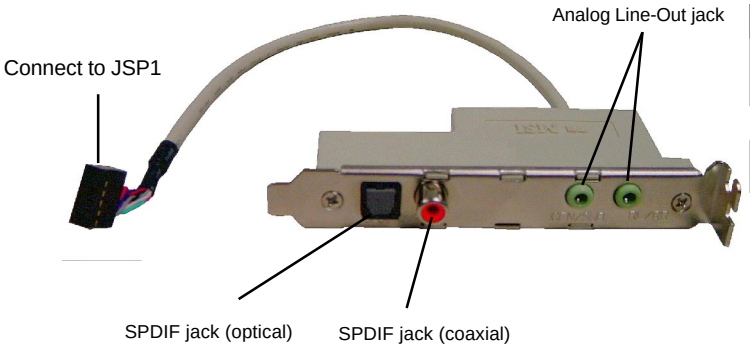


JSP1

JSP1 Pin Definition

PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	VCC5	VCC 5V	2	VDD3	VDD 3.3V
3	SPDFO	S/PDIF output	4	(No Pin)	Key
5	GND	Ground	6	SPDFI	S/PDIF input
7	LFE-OUT	Audio bass output	8	SOUT-R	Audio right surrounding output
9	CET-OUT	Audio center output	10	SOUT-L	Audio left surrounding output
11	GND	Ground	12	GND	Ground

Optional S-Bracket



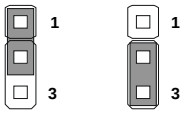
Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:

JBAT1



Keep Data Clear Data

MSI Reminds You...

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

The motherboard provides one AGP slot and five 32-bit PCI bus slots.

AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot supports 8x/4x AGP card.

PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

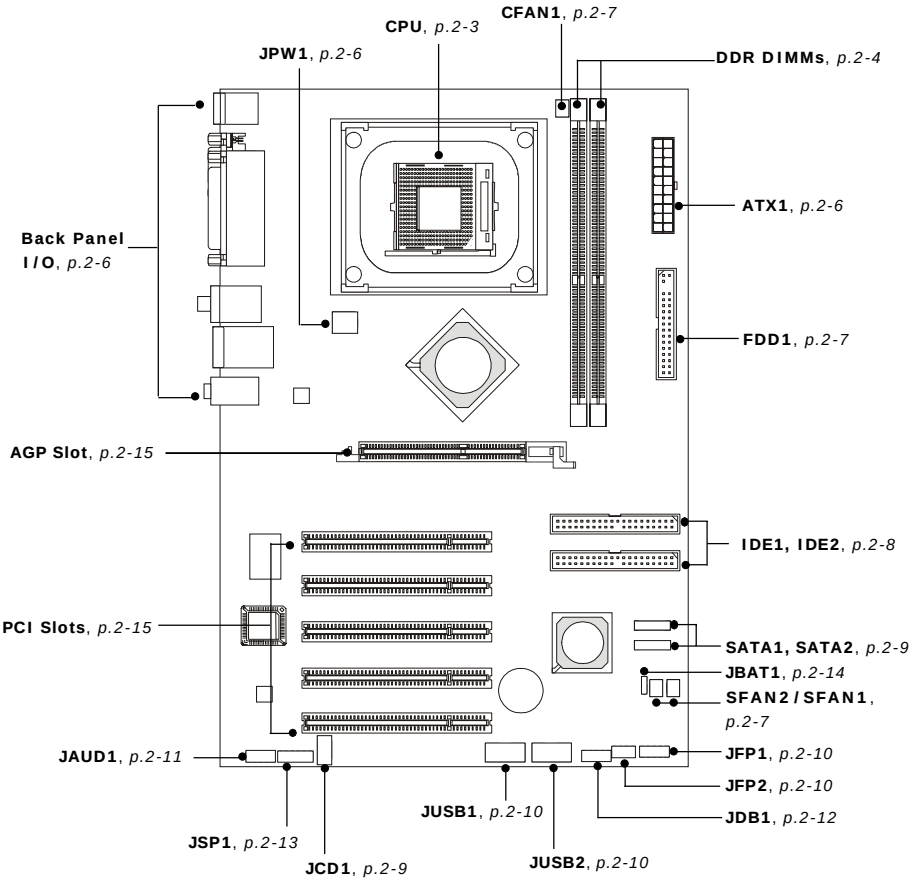
	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#
PCI Slot 4	INT D#	INT A#	INT B#	INT C#
PCI Slot 5	INT A#	INT B#	INT C#	INT D#

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 processors in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

CPU Core Speed Derivation Procedure

If	CPU Clock	=	200MHz
	Core/Bus ratio	=	12
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	200MHz x 12
		=	2.4GHz

Memory Speed/CPU FSB Support Matrix

Memory / FSB	DDR 266	DDR 333	DDR 400
400 MHz	OK	OK	N/A
533 MHz	OK	OK	OK
800 MHz	N/A	OK	OK

MSI Reminds You...

Overheating

Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Overclocking

This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Memory

The mainboard provides 2 slots for 184-pin, 2.5V DDR DIMM modules and supports the memory size up to 2 GB without ECC,. You can install DDR266/ DDR333/DDR400 DDR SDRAM modules on the DDR DIMM slots. To operate properly, at least one DIMM module must be installed.

DIMM1-2

Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. Three types of DDR are available at the time of writing: DDR266, DDR333 & DDR400. DDR266 DDR SDRAM running at 133MHz will produce about 1.6GB/s memory bandwidth. DDR333 running at 166MHz will produce 2.1GB/s memory bandwidth. DDR400 is also available with bandwidith up to 3.2GB/s for single-channel mode or with 6.4GB/s for dual-channel mode. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

DDR DIMM Module Combination

Install at least one DIMM module on the slots. Memory modules can be installed on the slots in any order. You can install either single- or double-side modules to meet your own needs.

Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
Maximum System Memory Supported		64MB~2GB

S: Single Side **D: Double Side**

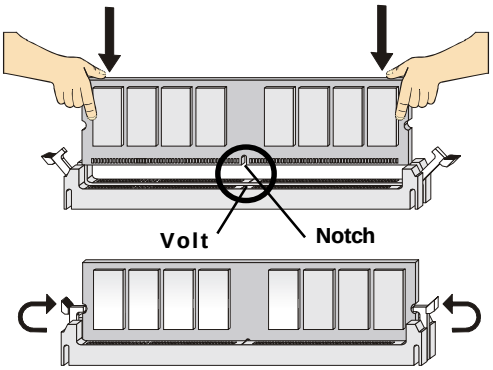
Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.

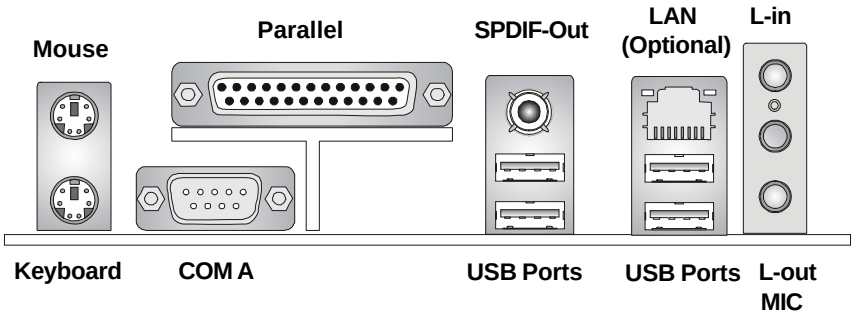
MSI Reminds You...
You can barely see the golden finger if the module is properly inserted in the socket.

3. The plastic clip at each side of the DIMM slot will automatically close.



Back Panel / Power Supply

The back panel provides the following connectors:



ATX 20-Pin Power Connector: ATX1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

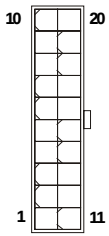
ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

JPW1

JPW1 Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V



ATX1

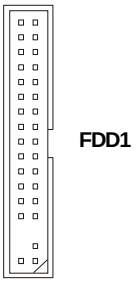
ATX1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

Connectors

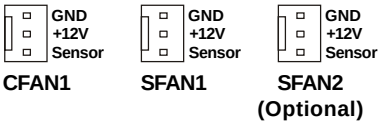
Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



Fan Power Connectors: CFAN1/SFAN1/SFAN2

The CPUFAN1 (processor fan), SFAN1, and SFAN2 (system fan) support system cooling fan with +12V. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



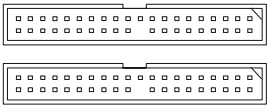
MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.

2. CFAN1 supports the fan control. You can install the PC Alert utility that will automatically control the CPU fan speed according to the actual CPU temperature.

ATA133 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~5, Bus Master, and Ultra DMA 33/66/100/133 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy and other devices. These connectors support the provided IDE hard disk cable.



IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

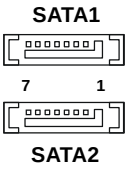
IDE2 can also connect a Master and a Slave drive.

MSI Reminds You...

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

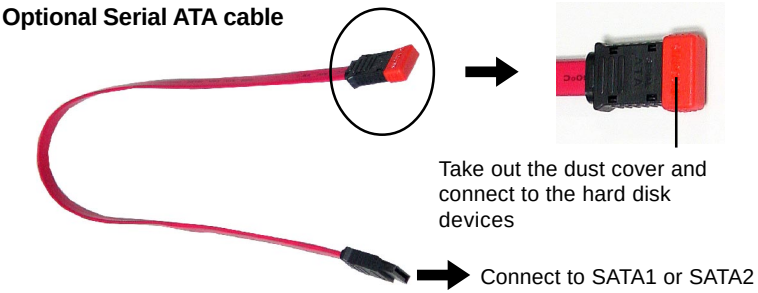
Serial ATA HDD Connectors: SATA1, SATA2 (Optional)

The mainboard provides dual high-speed Serial ATA interface ports. The ports support 1st generation Serial ATA data rates of 150MB/s and are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk drive.



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

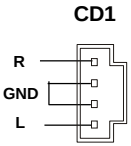


MSI Reminds You...

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, the loss of data may occur during transmission.

CD-In Connector: CD1

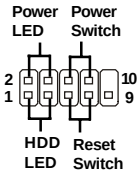
The connector is for CD-ROM audio connector.



Front Panel Connectors: JFP1 & JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

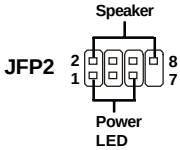
JFP1



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

JFP2

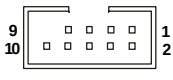


JFP2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+

Front USB Connectors: JUSB1 & JUSB2

The mainboard provides two USB 2.0 pin headers *JUSB1* & *JUSB2* that are compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.



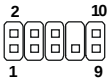
JUSB1 / JUSB2

Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



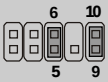
JAUD1

JAUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

MSI Reminds You...

If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.



D-Bracket™ 2 Connector: JDB1

The mainboard comes with a JDB1 connector for you to connect to D-Bracket™ 2. D-Bracket™ 2 is a USB Bracket that supports both USB1.1 & 2.0 spec. It integrates four LEDs and allows users to identify system problem through 16 various combinations of LED signals. For definitions of 16 signal combinations, please refer to *D-Bracket™ 2* in *Chapter 1*.

JDB1

JDB1 Pin Definition

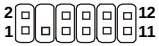
Pin	Signal
1	DBG1 (high for green color)
2	DBR1 (high for red color)
3	DBG2 (high for green color)
4	DBR2 (high for red color)
5	DBG3 (high for green color)
6	DBR3 (high for red color)
7	DBG4 (high for green color)
8	DBR4 (high for red color)
9	Key
10	NC

Depending on the optional bracket you buy, please note there might be a Bluetooth Sticker to cover one of the port, which marks "***Do no remove, when using bluetooth".***

S-Bracket (SPDIF) Connector: JSP1 (Optional)

The connector allows you to connect a S-Bracket for Sony & Philips Digital Interface (SPDIF). The S-Bracket offers 2 SPDIF jacks for digital audio transmission (one for optical fiber connection and the other for coaxial), and 2 analog Line-Out jacks for 4-channel audio output.

To attach the fiber-optic cable to optical SPDIF jack, you need to remove the plug from the jack first. The two SPDIF jacks support *SPDIF output* only. For more information on the S-Bracket, refer to *Appendix: Using 4- or 6-Channel Audio Function*.

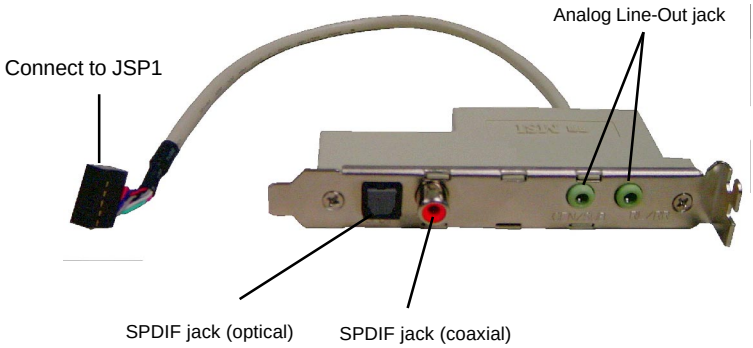


JSP1

JSP1 Pin Definition

PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	VCC5	VCC 5V	2	VDD3	VDD 3.3V
3	SPDFO	S/PDIF output	4	(No Pin)	Key
5	GND	Ground	6	SPDFI	S/PDIF input
7	LFE-OUT	Audio bass output	8	SOUT-R	Audio right surrounding output
9	CET-OUT	Audio center output	10	SOUT-L	Audio left surrounding output
11	GND	Ground	12	GND	Ground

Optional S-Bracket



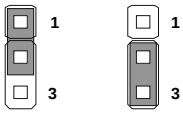
Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:

JBAT1



Keep Data Clear Data

MSI Reminds You...

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

The motherboard provides one AGP slot and five 32-bit PCI bus slots.

AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot supports 8x/4x AGP card.

PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#
PCI Slot 4	INT D#	INT A#	INT B#	INT C#
PCI Slot 5	INT A#	INT B#	INT C#	INT D#

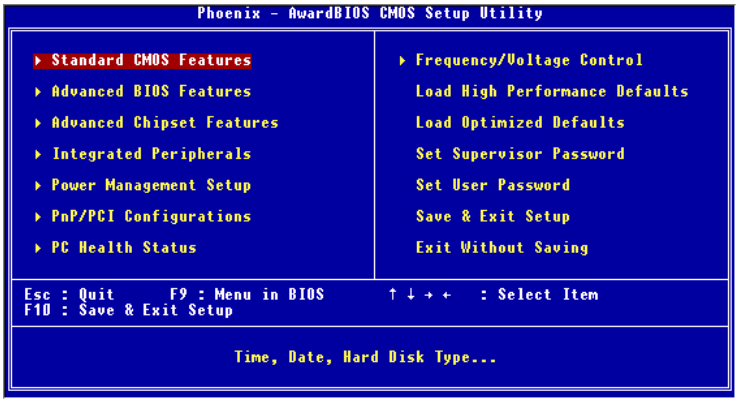
BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

The Main Menu

Once you enter Phoenix-Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



Standard CMOS Features
Use this menu for basic system configurations, such as time, date etc.

Advanced BIOS Features
Use this menu to setup the items of special enhanced features.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PnP/PCI Configurations
This entry appears if your system supports PnP/PCI.

PC Health Status
This entry shows your PC health status.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

Load High Performance Defaults
Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

Load Optimized Defaults
Use this menu to load factory default settings into the BIOS for stable system performance operations.

Set Supervisor Password
Use this menu to set Supervisor Password.

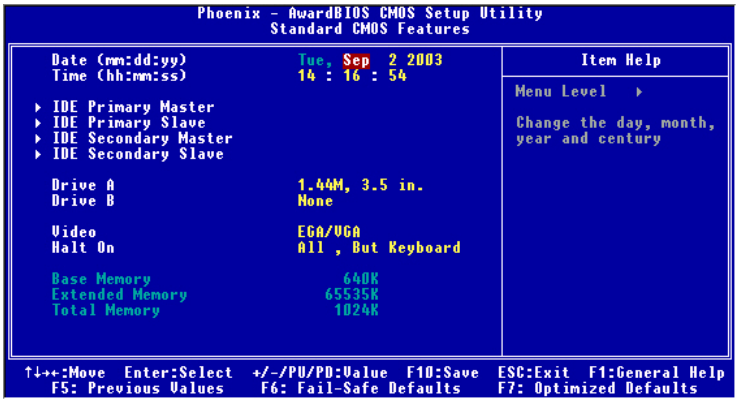
Set User Password
Use this menu to set User Password.

Save & Exit Setup
Save changes to CMOS and exit setup.

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu are divided into 11 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Tue, Sep 2 2003
Time (hh:mm:ss) 14 : 16 : 54
IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave
Drive A 1.44M, 3.5 in.
Drive B None
Video EGA/VGA
Halt On All , But Keyboard
Base Memory 640K
Extended Memory 65535K
Total Memory 1024K
Item Help
Menu Level
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Date

This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

Time

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

IDE Primary/Secondary Master/Slave

Press PgUp/<+> or PgDn/<-> to select *Manual*, *None* or *Auto* type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If

your hard disk drive type is not matched or listed, you can use *Manual* to define your own drive type manually.

If you select *Manual*, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

Drive A:/B:
This item allows you to set the type of floppy drives installed. Available options: *None, 360K, 5.25 in., 1.2M, 5.25 in., 720K, 3.5 in., 1.44M, 3.5 in., 2.88M, 3.5 in.*.

Video
The setting controls the type of video adapter used for the primary monitor of the system. Available options: *EGA/VGA , CGA 40, CGA 80, MONO*.

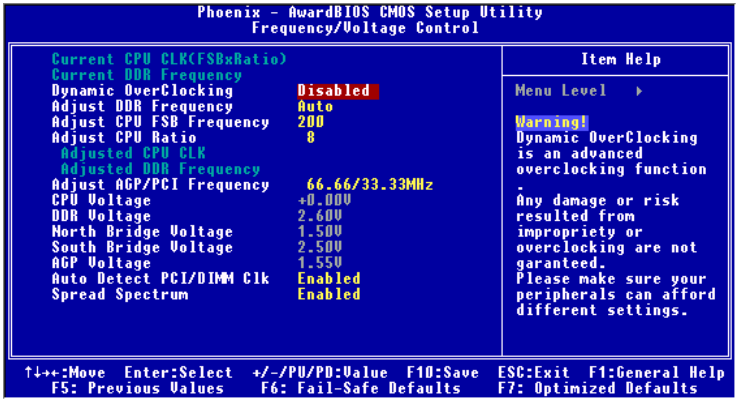
Halt On
The setting determines whether the system will stop if an error is detected at boot. Available options are:

All Errors	The system stops when any error is detected.
No Errors	The system doesn't stop for any detected error.
All, But Keyboard	The system doesn't stop for a keyboard error.
All, But Diskette	The system doesn't stop for a disk error.
All, But Disk/Key	The system doesn't stop for either a disk or a keyboard error.

Base Memory/Extended Memory/Total Memory
These items show the memory status of your system (read only).

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.


Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
Current CPU CLK(FSBxRatio)
Current DDR Frequency
Dynamic OverClocking Disabled
Adjust DDR Frequency Auto
Adjust CPU FSB Frequency 200
Adjust CPU Ratio 8
Adjusted CPU CLK
Adjusted DDR Frequency
Adjust AGP/PCI Frequency 66.66/33.33MHz
CPU Voltage +0.000V
DDR Voltage 2.60V
North Bridge Voltage 1.50V
South Bridge Voltage 2.50V
AGP Voltage 1.55V
Auto Detect PCI/DIMM Clk Enabled
Spread Spectrum Enabled
Item Help
Menu Level ▸
Warning!
Dynamic OverClocking is an advanced overclocking function.
Any damage or risk resulted from impropriety or overclocking are not garanteed.
Please make sure your peripherals can afford different settings.
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Dynamic OverClocking

Dynamic Overclocking Technology is the automatic overclocking function, included in the MSI™'s newly developed CoreCell™ Technology. It is designed to detect the load balance of CPU while running programs, and to adjust the best CPU frequency automatically. When the motherboard detects CPU is running programs, it will speed up CPU automatically to make the program run smoothly and faster. When the CPU is temporarily suspending or staying in the low load balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology will be powered only when users' PC need to run huge amount of data like 3D games or the video process, and the CPU frequency need to be boosted up to enhance the overall performance. Setting options:

Disabled	Disable Dynamic Overclocking.
Private	1st level of overclocking.
Sergeant	2nd level of overclocking.
Captain	3rd level of overclocking, also the default value of "Load High Performance Defaults".
Colonel	4th level of overclocking.
General	5th level of overclocking.
Commander	6th level of overclocking.

MSI Reminds You...

1. *Even though the Dynamic Overclocking Technology is more stable than manual overclocking, basically, it is still risky. We suggest user to make sure that your CPU can afford to overclocking regularly first. If you find the PC appears to be unstable or reboot incidentally, it's better to disable the Dynamic Overclocking or to lower the level of overclocking options. By the way, if you need to conduct overclocking manually, you also need to disable the Dynamic OverClocking first.*
2. *Meanwhile, there are two functions to protect user's system from crash.*
   - *There is a safe key "Ins" in BIOS. In case the overclocking fails, you can press "Ins" key while system rebooting to restore to the BIOS defaults.*
   - *If the system incidentally reboot for four times, the BIOS will also be restored to the defaults.*

Adjust DDR Frequency

This item specifies the frequency of DDR SDRAM. Settings are: *266MHz, 333MHz, 400MHz, 433MHz, 450MHz, 466MHz, 500MHz, 533MHz, Auto.*

Adjust CPU FSB Frequency

This item specifies the clock frequency of CPU host bus (FSB), AGP (3V66) and PCI bus. It provides a method for end users to overclock the processor. Setting options: Give a DEC value by entering a number between *maximum 500 MHz* to *minimum 200 MHz.*

Adjust CPU Ratio

This setting controls the ratio of CPU FSB Clock & DRAM Frequency to enable the CPU & DRAM to run at different frequency combinations. Please note that the setting options vary according to the CPU FSB Clock preset.

Adjust AGP/PCI Frequency (MHz)

This setting allows you to select the CPU Front Side Bus clock frequency. Settings: *66.66/33.33Mhz, 66.00/33.00Mhz, 75.40/75.40Mhz, 88.00/44.00Mhz.*

CPU Voltage

This item specifies the voltage of CPU Vcore. ***Note*** *that changing CPU Vcore could result in unstable system; therefore, it is not recommended to change*

the default setting for long-term purpose. Settings: +0.00V~+0.20V

DDR Voltage
Adjusting the DDR voltage can increase the DDR speed. Any changes made to this setting may cause a stability issue, so **changing the DDR voltage for long-term purpose is NOT recommended.** *Settings: 2.50V~2.85V*

North Bridge/South Bridge Voltage
These two items specifie the voltage of North Bridge Voltage and South Bridge Voltage. Any changes made to these settings may cause a stability issue, so **changing the North Bridge/South Bridge Voltage for long-term purpose is NOT recommended.** *Settings: 1.50V~1.80V(North), 2.50V~3.00V(South)*

AGP Voltage
AGP voltage is adjustable in the field, allowing you to increase the performance of your AGP display card when overclocking, but the stability may be affected. *Settings: 1.50V~2.20V*

MSI Reminds You...
The settings shown in different color in CPU Volatage, DDR Voltage, North Bridge/South Bridge Voltage and AGP Voltage help to verify if your setting is proper for your system.

White: Safe setting.

Yellow: High performance setting.

Red: Not recommended setting and the system may be unstable.

Auto Detect PCI/DIMM Clk
This option allows you to enable/disable the feature of auto detecting the clock frequency of the installed PCI bus. The settings are: *Enabled, Disabled*.

Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disable* for optimal system stability and performance. But if you are plagued by EMI, set to *Enabled* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.

Load High Performance/Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to High Performance defaults or BIOS Setup defaults. The High Performance Defaults are the values set by the mainboard manufacturer for the best system performance but probably will cause a stability issue. The BIOS Setup Defaults are the default values also set by the mainboard manufacturer for stable performance of the mainboard.

When you select Load High Performance Defaults, a message as below appears:

[Load High Performance Defaults]
WARNING! This default might have potential reliability risk.
Press [Enter] to Continue
Or [ESC] to Abort

Pressing 'Enter' loads the default BIOS values that enable the best system performance but may lead to a stability issue.

MSI Reminds You...

The option is for power or overclocking users only*. Use of high performance defaults will tighten most timings to increase the system performance. Therefore, a high-end system configuration is a must, which means you need high-quality VGA adapter, RAM and so on.* ***We don't recommend that users should apply the high performance defaults in their regular systems.*** *Otherwise, the system may become unstable or even crash. If the system crashes or hangs after enabling the feature, please CLEAR CMOS DATA to resolve the problem. For more information, refer to "Clear CMOS Jumper:JBAT1" in Chapter 2.*

When you select Load Optimized Defaults, a message as below appears:

Pressing *Y* loads the default factory settings for optimal system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the Security Option of the Advanced BIOS Feature menu. If the Security Option is set to *System*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when you try to enter Setup.

MSI Reminds You...

About Supervisor Password & User Password:

Supervisor password:	*Can enter and change the settings of the setup menu.*
User password:	*Can only enter but do not have the right to change the settings of the setup menu.*

Appendix A: Using 2-, 4- & 6-Channel Audio Function

The mainboard is equipped with Realtek ALC655 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC655 allows the board to attach 4 or 6 speakers for better surround sound effect. The section will tell you how to install and use 4-/6-channel audio function on the board.

Installing the Audio Driver

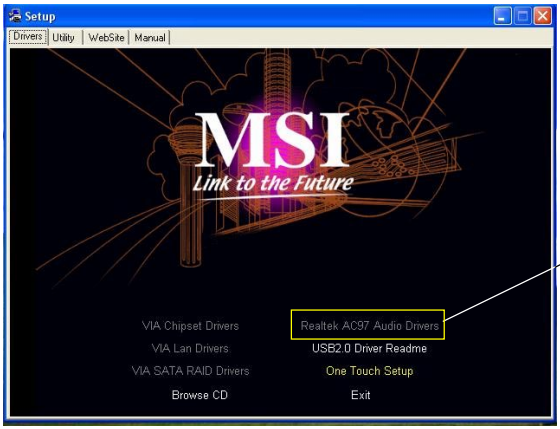
You need to install the driver for Realtek ALC655 chip to function properly before you can get access to 4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 98SE/ME/2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack2 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

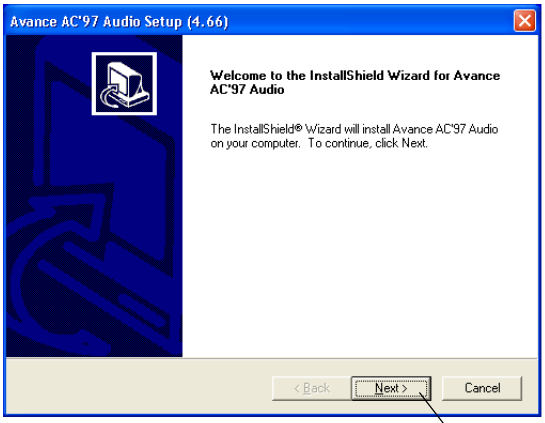
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek AC97 Audio Drivers**.



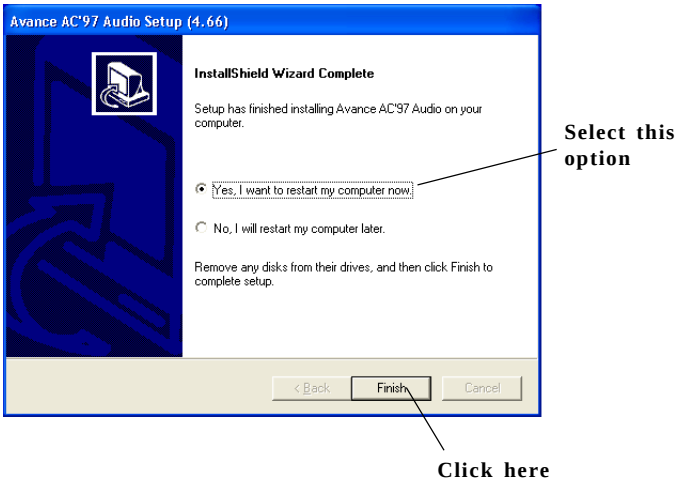
MSI Reminds You...

*The **AC97 Audio Configuration** software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.*

3 Click Next to install the AC'97 Audio software.


Avance AC'97 Audio Setup (4.66)
Welcome to the InstallShield Wizard for Avance AC'97 Audio
The InstallShield® Wizard will install Avance AC'97 Audio on your computer. To continue, click Next.
< Back
Next >
Cancel
Click here

4 Click Finish to restart the system.

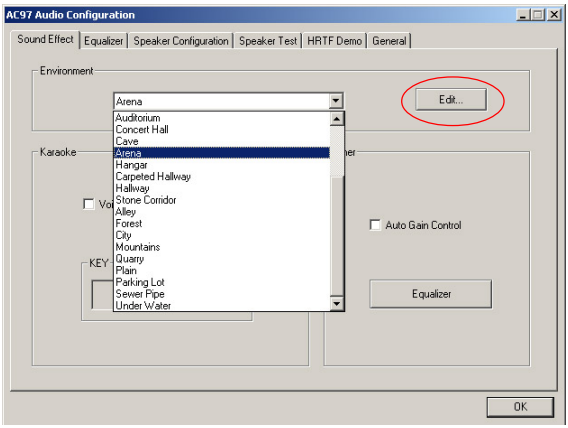

Avance AC'97 Audio Setup (4.66)
InstallShield Wizard Complete
Setup has finished installing Avance AC'97 Audio on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel
Select this option
Click here

Software Configuration

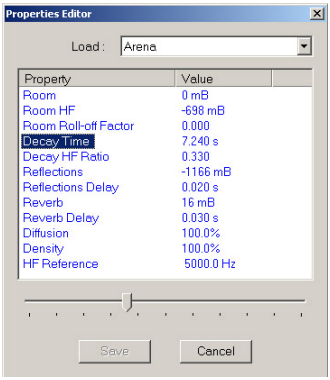
After installing the audio driver, you are able to use the 4-/6-channel audio feature now. Click the audio icon from the window tray at the lower-right corner of the screen to activate the **AC97 Audio Configuration**.

Sound Effect

Here you can select a sound effect you like from the **Environment** list.

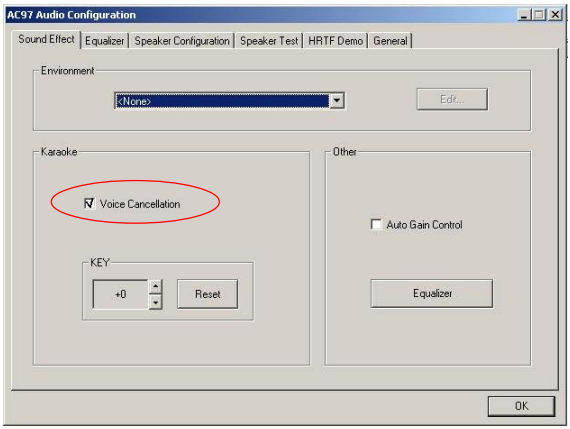


You may also edit the properties for an environment as you wish by clicking the **Edit** button, then just scroll the bar in the bottom for each property to adjust.



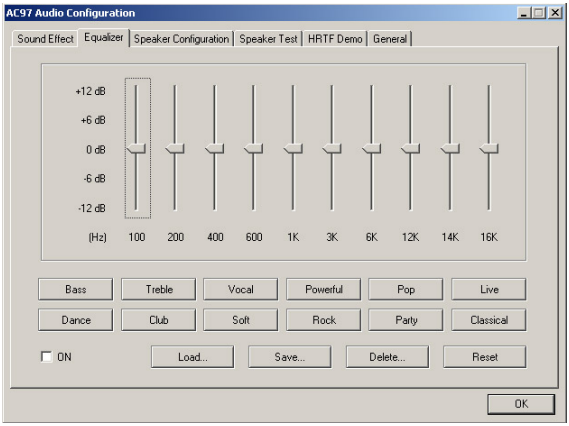
Here it provides the Karaoke function which will automatically remove human voice (lyrics) and leave melody for you to sing the song. Note that this function applies only for 2-channel audio operation.

Just check the **Voice Cancellation** box and then click **OK** to activate the Karaoke function.

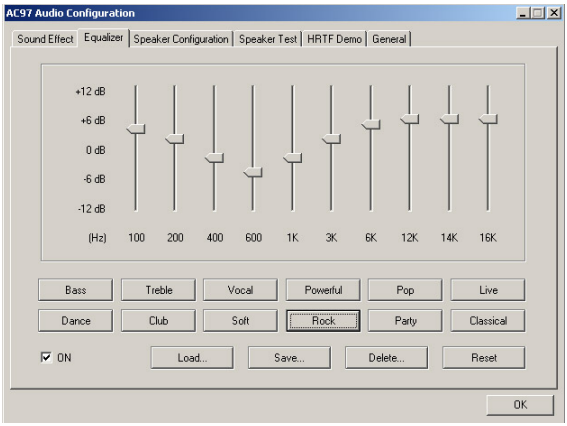


Equalizer

Here you regulate each equalizer for current playing digital sound sources.



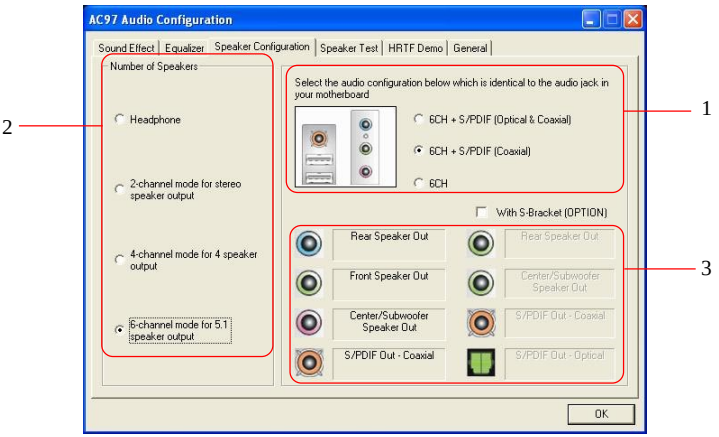
You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the buttons **Load** and **Save**. Or you may click **Reset** to use the default value.



Speaker Configuration

In this tab, you can easily configure your multi-channel audio function and speakers.

1. Select the audio configuration below which is identical to the audio jack in your mainboard.



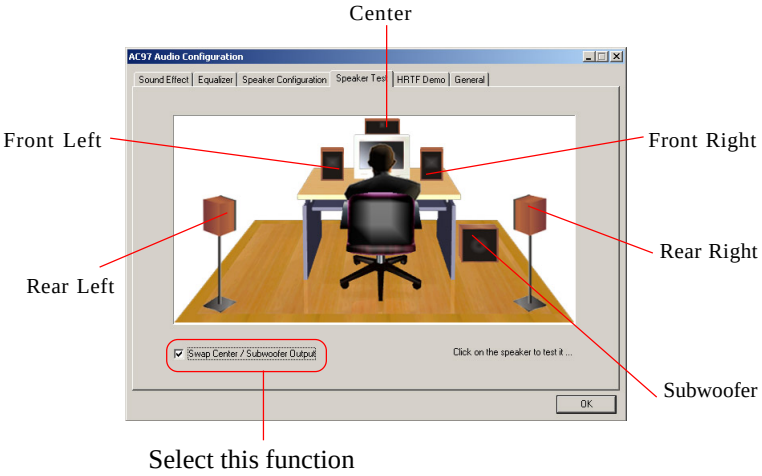
2. Select a desired multi-channel operation from ***Number of Speaker***.
   a. Headphone for the common headphone
   b. 2-Channel Mode for Stereo-Speaker Output
   c. 4-Channel Mode for 4-Speaker Output
   d. 6-Channel Mode for 5.1-Speaker Output

3. Here it shows the multi-channel setting for the audio jack. Please connect your speakers to the correct phone jack in accordance with the setting displayed here.

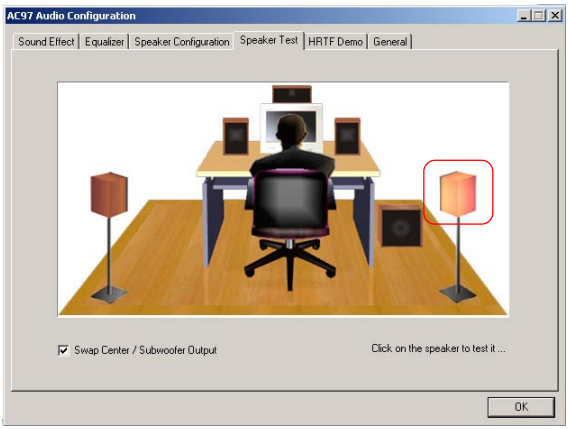
4. Then click **OK** to apply the configuration.

Speaker Test

You can use this tab to test each connected speaker to ensure if 4- or 6-channel audio operation works properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones.



Select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound.

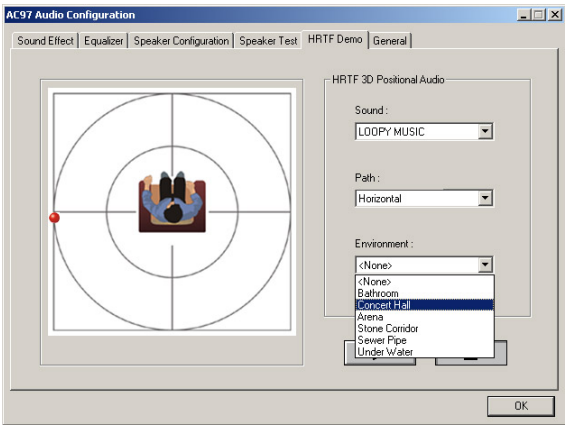


MSI Reminds You...

1. *6 speakers appear on the "Speaker Test" tab only when you select "**6-Channel Mode**" in the "Number of Speakers" column in "Speaker Configuration" tab. If you select "4-Channel Mode", only 4 speakers appear on the window.*
2. *While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.*

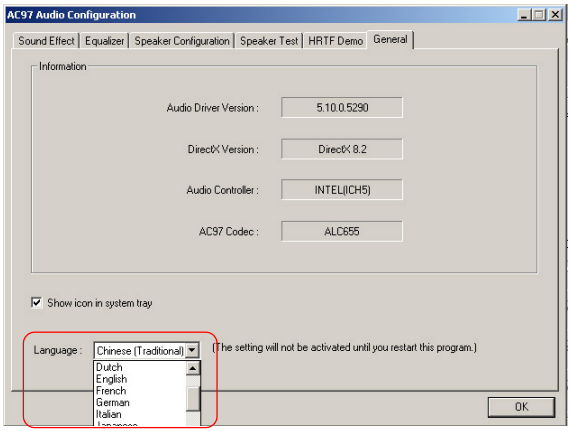
HRTF Demo

In this tab you may adjust your HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.



General

In this tab it provides some information about this AC97 Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & AC97 Codec. You may also select the language of this utility by choosing from the **Language** list.



Using 2-, 4- & 6- Channel Audio Function

After installing the audio driver, you are able to use the 4-/6-channel audio feature now. To enable 4- or 6-channel audio operation, first connect 4 or 6 speakers to the appropriate audio connectors, and then select 4- or 6-channel audio setting in the software utility.

There are two ways to utilize the function and connect the speakers to your computer:

- **Using the back panel only**
  If you do not have a S-Bracket, you can connect all speakers to the audio connectors on the back panel.
- **Using the optional S-Bracket**
  If your motherboard supports S-Bracket and you have installed S-Bracket in the computer, you can connect two speakers to back panel's Line-Out connector, and the rest of speakers to S-Bracket.

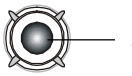
Using the Back Panel only

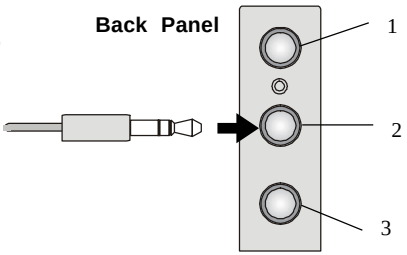
Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software utility.

- **2-Channel Mode for Stereo-Speaker Output**
  Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

1 Line In
2 Line Out *(Front channels)*
3 MIC
4 Coaxial SPDIF jack



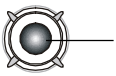


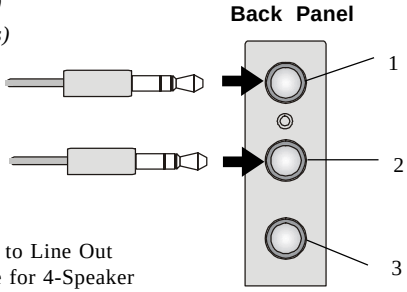
■ 4-Channel Mode for 4-Speaker Output

The audio jacks on the back panel always provide 2-channel analog audio output function, however these audio jacks can be transformed to 4- or 6- channel analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

Refer to the following diagram and caption for the function of each jack on the back panel when 4-Channel Mode is selected.

1 *Line Out *(Rear channels)*
2 Line Out *(Front channels)*
3 MIC
4 Coaxial SPDIF jack



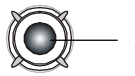


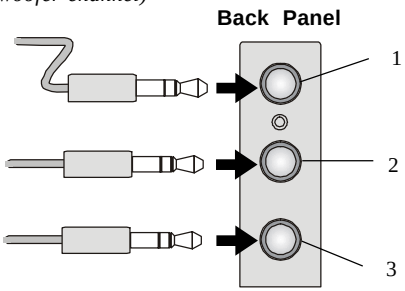
* Line In function is converted to Line Out function when 4-Channel Mode for 4-Speaker Output is selected.

■ 6-Channel Mode for 6-Speaker Output

Refer to the following diagram and caption for the function of each jack on the back panel when 6-Channel Mode is selected.

1 * Line Out *(Rear channels)*
2 Line Out *(Front channels)*
3 * Line Out *(Center and Subwoofer channel)*
4 Coaxial SPDIF jack





* Both Line In and MIC function are converted to Line Out function when 6-Channel Mode for 6-Speaker Output is selected.

MSI Reminds You...

If the audio signals coming from the Center and Subwoofer speaker are swapped when you play video or music on the computer, a converter may be required to exchange center and subwoofer audio signals. The converter can be purchased from a speaker store.

Using the Optional S-Bracket

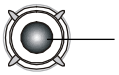
S-Bracket is an optional accessory. It gives access to analog and digital audio output by integrating both SPDIF (Sony & Philips Digital Interface) and analog LINE OUT connectors. To use the S-Bracket, you should select correct setting in the software utility. For information about the setting, refer to *Selecting 2-, 4- or 6-Channel Setting* later in the section.

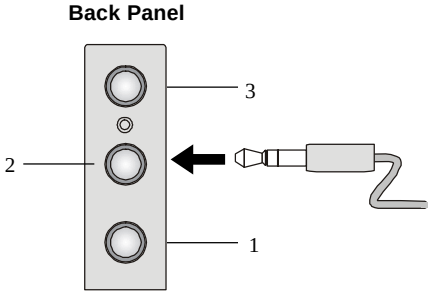
Connector configurations for 2-, 4- and 6-channel using S-Bracket are described below:

2-Channel Analog Audio Output

We recommend that you should still attach the speakers to BACK PANEL's Line Out connector during 2-channel audio mode even though S-Bracket's Line Out connectors function properly.

1 MIC
2 Line Out *(Front channels)*
3 Line In
4 Coaxial SPDIF jack

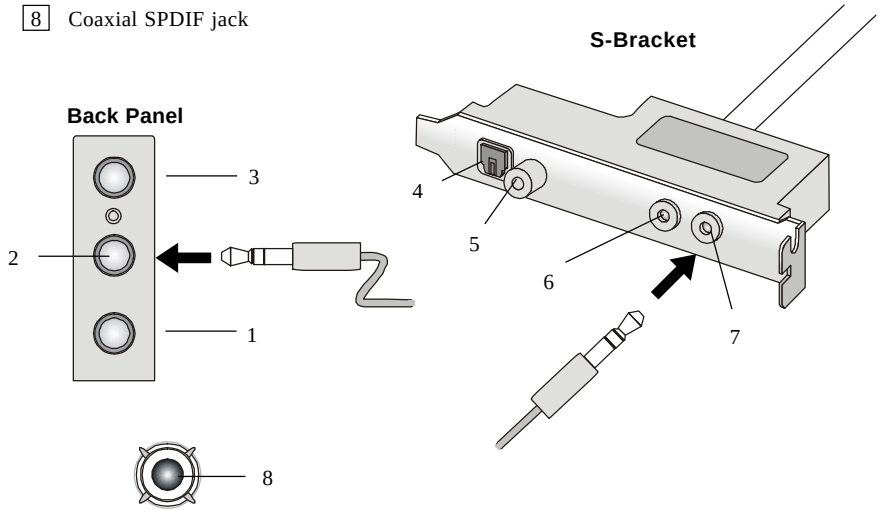




4-Channel Analog Audio Output

1 MIC
2 Line Out *(Front channels)*
3 Line In
4 Optical SPDIF jack
5 Coaxial SPDIF jack
6 Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
7 Line Out *(Rear channels)*
8 Coaxial SPDIF jack

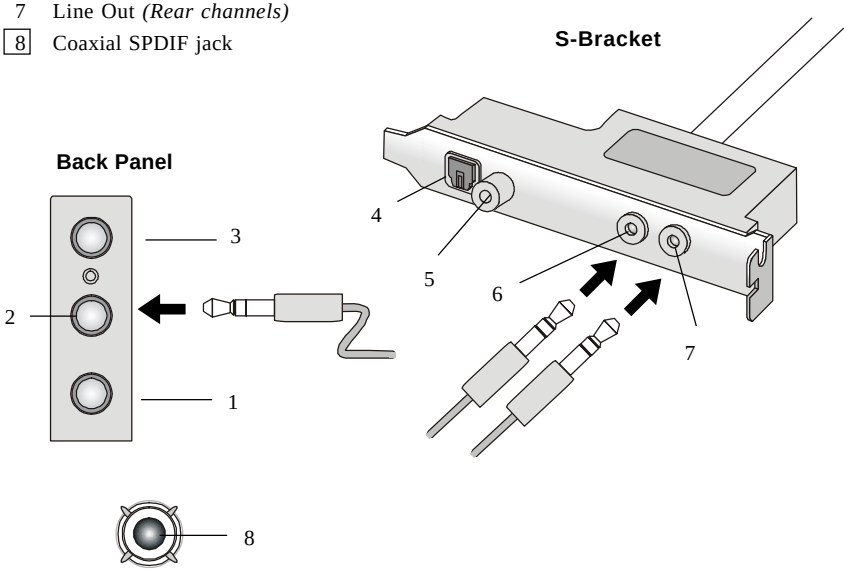
Description:
Connect two speakers to back panel's Line Out connector and two speakers to one Line Out connector of S-Bracket.



6-Channel Analog Audio Output

1 MIC
2 Line Out *(Front channels)*
3 Line In
4 Optical SPDIF jack
5 Coaxial SPDIF jack
6 Line Out *(Center and Subwoofer channel)*
7 Line Out *(Rear channels)*
8 Coaxial SPDIF jack

Description:
Connect two speakers to back panel's Line Out connector and four speakers to both Line Out connectors of S-Bracket.



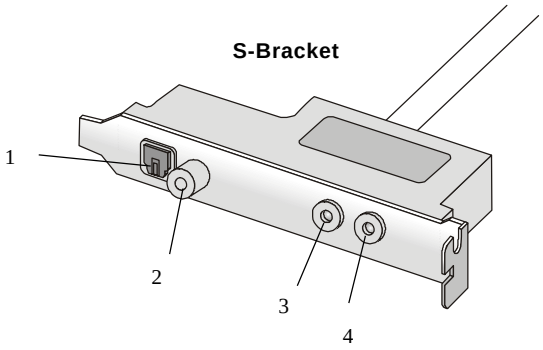
Digital Audio Output (2-Channel only)

For digital audio output, use the SPDIF (Sony & Philips Digital Interface) connectors supplied by *S-Bracket*. First, connect the SPDIF speakers to the appropriate SPDIF jack, and then select the audio channel you desire through the control panel of speakers. The SPDIF connectors support 2-channel audio operation only.

S-Bracket offers two types of SPDIF jacks: one for fiber-optic cable and the other for coaxial cable. Select the connector according to the type of your SPDIF speakers.

1 Optical SPDIF jack
2 Coaxial SPDIF jack
3 Line Out
4 Line Out

Description:
Select the correct type of SPDIF jack to connect SPDIF speakers. For optical connection, remove the plug from the S-Bracket before inserting the fiber-optic cable to it.



Appendix B: VIA VT8237 Serial ATA RAID Introduction

The Southbridge VT8237 provides a hybrid solution that combines two independent SATA ports for support of up to two Serial ATA (Serial ATA RAID) drives.

Serial ATA (SATA) is the latest generation of the ATA interface. SATA hard drives deliver blistering transfer speeds of up to 150MB/sec. Serial ATA uses long, thin cables, making it easier to connect your drive and improving the airflow inside your PC.

The key features of VT8237 SATA RAID are:

1. Support two SATA + two PATA hard disk drives.
2. Only SATA supports RAID.
3. Supports ATA 133 high performance hard disk drive.
4. Dual independent ATA channels and maximum connection of four hard disk drives allowed.
5. Supports Ultra DMA mode 6/5/4/3/2/1/0, DMA mode 2/1/0, and PIO mode 4/3/2/1/0.
6. Supports RAID 0 and RAID 1.
7. 4 KB to 64 KB striping block size support.
8. Bootable disk or disk array support.
9. Windows-based RAID configure and management software tool. (Compatible with BIOS)
10. Supports hot-swap failed disk drive in RAID 1 array.
11. ATA SMART function support.
12. Microsoft Windows 98, Me, NT4.0, 2000, XP operating systems support.
13. Event log for easy troubleshooting.

Introduction

This section gives a brief introduction on the RAID-related background knowledge and a brief introduction on VIA SATA RAID Host Controller. For users wishing to install their VIA SATA RAID driver and RAID software, proceed to **Driver and RAID Software Installation** section.

RAID Basics

RAID (Redundant Array of Independent Disks) is a method of combining two or more hard disk drives into one logical unit. The advantage of an Array is to provide better performance or data fault tolerance. Fault tolerance is achieved through data redundant operation, where if one drives fails, a mirrored copy of the data can be found on another drive. This can prevent data loss if the operating system fails or hangs. The individual disk drives in an array are called “members”. The configuration information of each member is recorded in the “reserved sector” that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the operating system.

Hard disk drives can be combined together through a few different methods. The different methods are referred to as different RAID levels. Different RAID levels represent different performance levels, security levels and implementation costs. The RAID levels which the VIA VT8237 SATA RAID Host Controller supports are RAID 0 and RAID 1. The table below briefly introduced these RAID levels.

RAID Level	No. of Drives	Capacity	Benefits
RAID 0 (Striping)	2	Number drives * 2	Highest performance without data protection
RAID 1 (Mirroring)	2	Smallest size	Data protection

RAID 0 (Striping)

RAID 0 reads and writes sectors of data interleaved between multiple drives. If any disk member fails, it affects the entire array. The disk array data capacity is equal to the number of drive members times the capacity of the smallest member. The striping block size can be set from 4KB to 64KB. RAID 0 does not support fault tolerance.

RAID 1 (Mirroring)

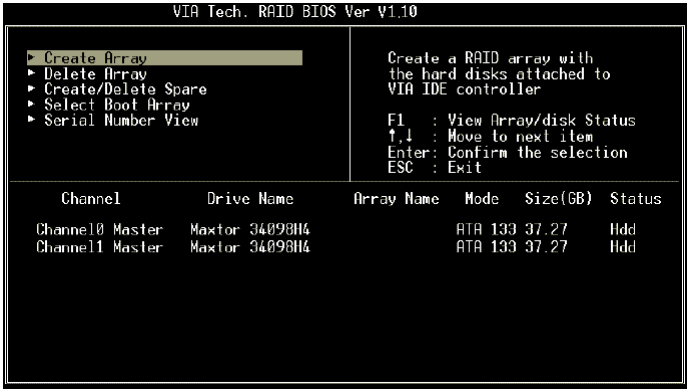
RAID 1 writes duplicate data onto a pair of drives and reads both sets of data in parallel. If one of the mirrored drives suffers a mechanical failure or does not respond, the remaining drive will continue to function. Due to redundancy, the drive capacity of the array is the capacity of the smallest drive. Under a RAID 1 setup, an extra drive called the .spare drive. can be attached. Such a drive will be activated to replace a failed drive that is part of a mirrored array. Due to the fault tolerance, if any RAID 1 drive fails, data access will not be affected as long as there are other working drives in the array.

BIOS Configuration

When the system powers on during the POST (Power-On Self Test) process, press <Tab> key to enter the BIOS configuration.

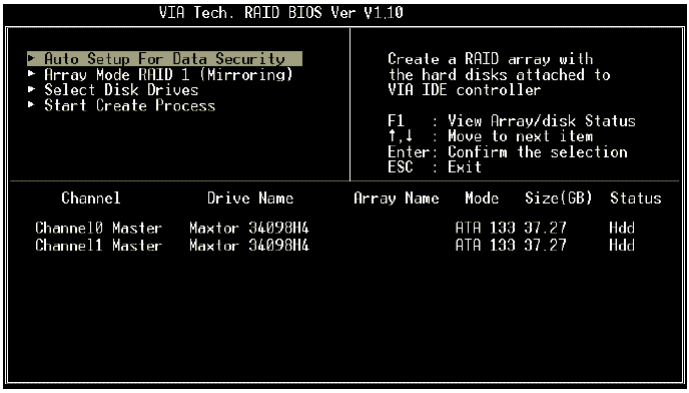
VIA Technologies, Inc. VIA VT6420 RAID BIOS Setting Utility V1.10
Copyright (C) VIA Technologies, Inc. All Right reserved.
Press < Tab > key into User Window!
Scan Devices, Please wait...
Channel 0 Master: Maxtor 34098H4
Channel 1 Master: Maxtor 34098H4

The Serial ATA RAID volume may be configured using the VIA Tech. RAID BIOS. Always use the arrow keys to navigate the main menu, use up and down arrow key to select the each item and press <Enter> to call out the list of creation steps. The main interface of BIOS configuration utility is as below:


VIA Tech. RAID BIOS Ver V1.10
Create Array
Delete Array
Create/Delete Spare
Select Boot Array
Serial Number View
Create a RAID array with the hard disks attached to VIA IDE controller
F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit
Channel Drive Name Array Name Mode Size(GB) Status
Channel0 Master Maxtor 34098H4 ATA 133 37.27 Hdd
Channel1 Master Maxtor 34098H4 ATA 133 37.27 Hdd

Create Disk Array

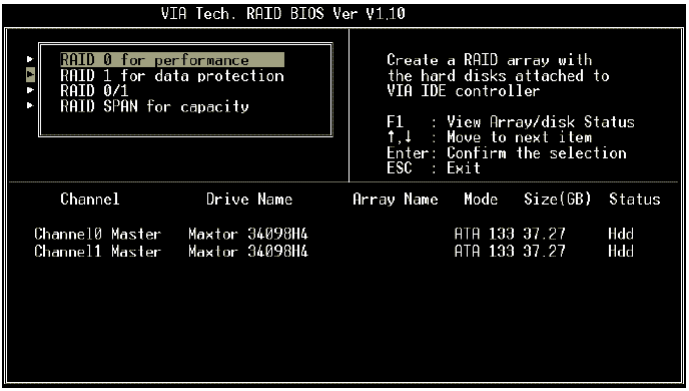
Use the up and down arrow keys to select the **Create Array** command and press <Enter>.


VIA Tech. RAID BIOS Ver V1.10
Auto Setup For Data Security
Array Mode RAID 1 (Mirroring)
Select Disk Drives
Start Create Process
Create a RAID array with the hard disks attached to VIA IDE controller
F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit
Channel Drive Name Array Name Mode Size(GB) Status
Channel0 Master Maxtor 34098H4 ATA 133 37.27 Hdd
Channel1 Master Maxtor 34098H4 ATA 133 37.27 Hdd

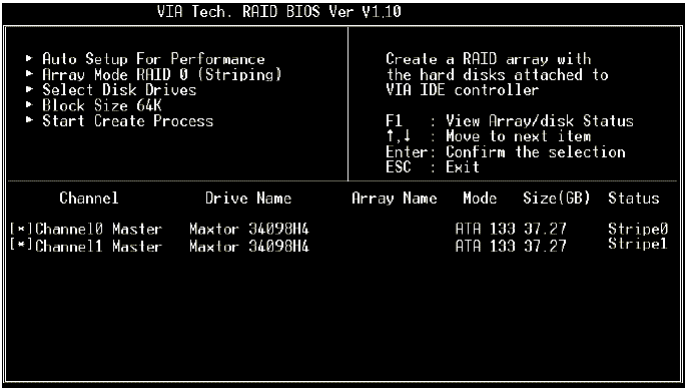
MSI Reminds You...

The "Channel", "Drive Name", "Mode" and "Size (GB)" in the following example might be different from your system.

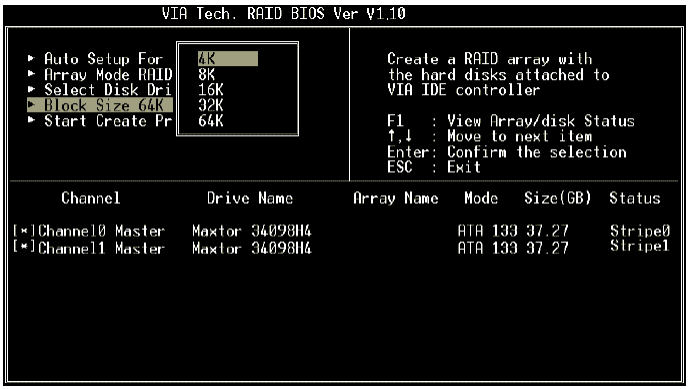
Select **Array Mode** and press <Enter>, a list of array modes will appear. Highlight the target array mode that you want to create, and press <Enter> to confirm the selection. If RAID 1 or RAID 0/1 is selected, an option list will popup and enable the users to select **Create only** or **Create and duplicate**. **Create only** will allow BIOS to only create an array. The data on the mirroring drive may be different from the source drive. **Create and duplicate** lets BIOS copy the data from the source to the mirroring drive.


VIA Tech. RAID BIOS Ver V1.10
RAID 0 for performance
RAID 1 for data protection
RAID 0/1
RAID SPAN for capacity
Create a RAID array with the hard disks attached to VIA IDE controller
F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit
Channel Drive Name Array Name Mode Size(GB) Status
Channel0 Master Maxtor 34098H4 ATA 133 37.27 Hdd
Channel1 Master Maxtor 34098H4 ATA 133 37.27 Hdd

After array mode is selected, there are two methods to create a disk array. One method is "**Auto Setup"** and the other one is "**Select Disk Drives"**. **Auto Setup** allows BIOS to select the disk drives and create arrays automatically, but it does not duplicate the mirroring drives even if the user selected **Create and duplicate** for RAID 1. It is recommended all disk drives are new ones when wanting to create an array. **Select Disk Drives** lets the user select the array drives by their requirements. When using **Select Disk Drives**, the channel column will be activated. Highlight the target drives that you want to use and press <Enter> to select them. After all drives have been selected, press <Esc> to go back to the creation steps menu.


VIA Tech. RAID BIOS Ver V1.10
▸ Auto Setup For Performance
▸ Array Mode RAID 0 (Striping)
▸ Select Disk Drives
▸ Block Size 64K
▸ Start Create Process
Create a RAID array with
the hard disks attached to
VIA IDE controller
F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit
Channel Drive Name Array Name Mode Size(GB) Status
[*]Channel0 Master Maxtor 34098H4 ATA 133 37.27 Stripe0
[*]Channel1 Master Maxtor 34098H4 ATA 133 37.27 Stripe1

If user selects a RAID 0 array in step 2, the block size of the array can also be selected. Use the arrow key to highlight **Block Size** and press <Enter>, then select a block size from the popup menu. The block size can be 4KB to 64KB.


VIA Tech. RAID BIOS Ver V1.10
▸ Auto Setup For
▸ Array Mode RAID
▸ Select Disk Dri
▸ Block Size 64K
▸ Start Create Pr
4K
8K
16K
32K
64K
Create a RAID array with
the hard disks attached to
VIA IDE controller
F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit
Channel Drive Name Array Name Mode Size(GB) Status
[*]Channel0 Master Maxtor 34098H4 ATA 133 37.27 Stripe0
[*]Channel1 Master Maxtor 34098H4 ATA 133 37.27 Stripe1

MSI Reminds You...

Even though 64KB is the recommended setting for most users, you should choose the block size value which is best suited to your specific RAID usage model.

***4KB**: For specialized usage models requiring 4KB blocks*
***8KB**: For specialized usage models requiring 8KB blocks*
***16KB**: Best for sequential transfers*
***32KB**: Good for sequential transfers*
***64KB**: Optimal setting*

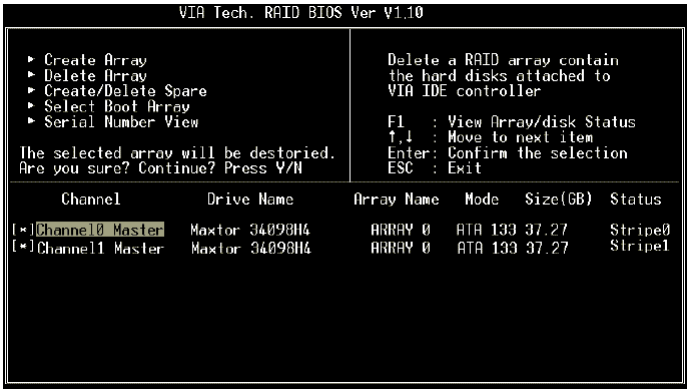
Use the arrow key to highlight **Start Create Process** and press <Enter>. A warning message will appear, Press **Y** to finish the creation, or press **N** to cancel the creation.

Important note: All existing content in the hard drive will be destroyed after array creation.

Delete Disk Array

A RAID can be deleted after it has been created. To delete a RAID, use the following steps:

1. Select **Delete Array** in the main menu and press <Enter>. The channel column will be activated.
2. Select the member of an array that is to be deleted and press <Enter>. A warning message will show up, press Y to delete or press N to cancel.



Deleting a disk array will destroy all the data on the disk array except RAID 1 arrays. When a RAID is deleted, the data on these two hard disk drives will be reserved and become two normal disk drives.

Create and Delete Spare Hard Drive

If a RAID 1 array is created and there are drives that do not belong to other arrays, the one that has a capacity which is equal to or greater than the array capacity can be selected as a spare drive for the RAID 1 array. Select **Create/Delete Spare** and press <Enter>, the channel column will then be activated. Select the drive that you want to use as a spare drive and press <Enter>, the selected drive will be marked as **Spare**. The spare drive cannot be accessed in an OS.

To delete a spare drive, highlight **Create/Delete Spare** and press <Enter>. The spare drive will be highlighted, press <Enter> to delete the spare drive.

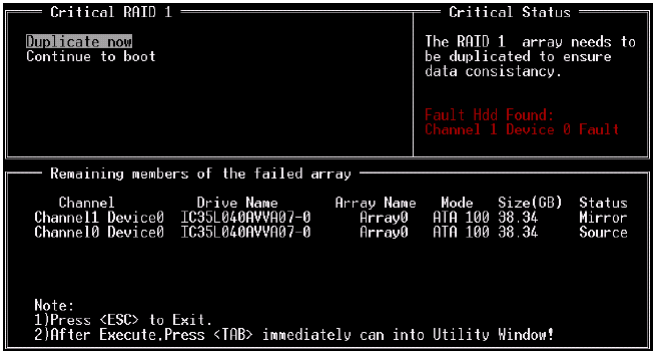
View Serial Number of Hard Drive

Highlight **Serial Number View** and press <Enter>. Use arrow key to select a drive, the selected drive's serial number can be viewed in the last column. The serial number is assigned by the disk drive manufacturer.

Press the **F1** key to show the array status on the lower screen. If there are no disk arrays then nothing will be displayed on the screen.

Duplicate Critical RAID 1 Array

When booting up the system, BIOS will detect if the RAID 1 array has any inconsistencies between user data and backup data. If BIOS detects any inconsistencies, the status of the disk array will be marked as critical, and BIOS will prompt the user to duplicate the RAID 1 in order to ensure the backup data consistency with the user data.


Critical RAID 1
Duplicate now
Continue to boot
Critical Status
The RAID 1 array needs to be duplicated to ensure data consistancy.
Fault Hdd Found:
Channel 1 Device 0 Fault
Remaining members of the failed array
Channel Drive Name Array Name Mode Size(GB) Status
Channel1 Device0 IC35L040AVVA07-0 Array0 ATA 100 38.34 Mirror
Channel0 Device0 IC35L040AVVA07-0 Array0 ATA 100 38.34 Source
Note:
1)Press <ESC> to Exit.
2)After Execute,Press <TAB> immediately can into Utility Window!

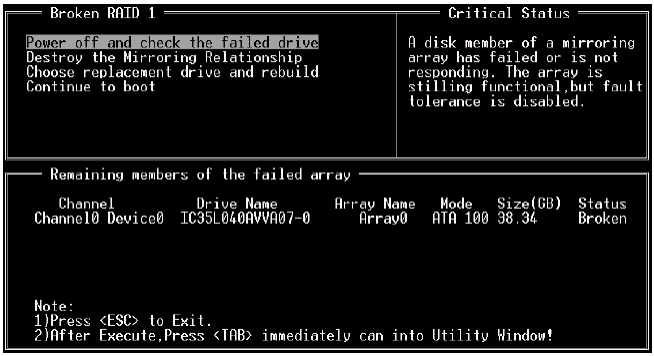
If user selects **Continue to boot,** it will enable duplicating the array after booting into OS.

Rebuild Broken RAID 1 Array

When booting up the system, BIOS will detect if any member disk drives of RAID has failed or is absent. If BIOS detects any disk drive failures or missing disk drives, the status of the array will be marked as broken.

If BIOS detects a broken RAID 1 array but there is a spare hard drive available for rebuilding the broken array, the spare hard drive will automatically become the mirroring drive. BIOS will show a main interface just like a duplicated RAID 1. Selecting **Continue to boot** enables the user to duplicate the array after booting into operating system.

If BIOS detects a broken RAID 1 array but there is no spare hard drive available for rebuilding the array, BIOS will provide several operations to solve such problem.



1. Power off and Check the Failed Drive:

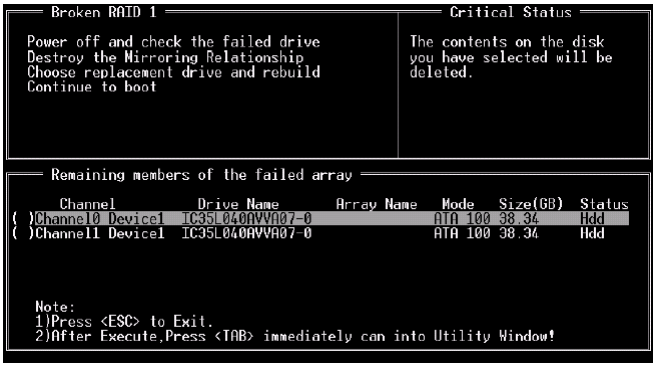
This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

2. Destroy the Mirroring Relationship:

This item cancels the data mirroring relationship of the broken array. For broken RAID 1 arrays, the data on the surviving disk will remain after the destroy operation. However, **Destroy the Mirroring Relationship** is not recommend because the data on the remaining disk will be lost when the hard drive is used to create another RAID 1 array.

3. Choose Replacement Drive and Rebuild:

This item enables users to select an already-connected hard drive to rebuild the broken array. After choosing a hard drive, the channel column will be activated.


Broken RAID 1
Critical Status
Power off and check the failed drive
Destroy the Mirroring Relationship
Choose replacement drive and rebuild
Continue to boot
The contents on the disk you have selected will be deleted.
Remaining members of the failed array
Channel Drive Name Array Name Mode Size(GB) Status
( )Channel0 Device1 IC35L040AVVA07-0 ATA 100 38.34 Hdd
( )Channel1 Device1 IC35L040AVVA07-0 ATA 100 38.34 Hdd
Note:
1)Press <ESC> to Exit.
2)After Execute,Press <TAB> immediately can into Utility Window!

Highlight the target hard drive and press <Enter>, a warning message will appear. Press **Y** to use that hard drive to rebuild, or press **N** to cancel. Please note selecting option **Y** will destroy all the data on the selected hard drive.

4. Continue to boot:

This item enables BIOS to skip the problem and continue booting into OS.

Installing RAID Software & Drivers

Install Driver in Windows OS

➤ **New Windows OS (2000/XP/NT4) Installation**

The following details the installation of the drivers while installing Windows XP.

1. Start the installation:

Boot from the CD-ROM. Press **F6** when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.

2. When the Windows Setup window is generated, press **S** to specify an Additional Device(s).

3. Insert the driver diskette ***VIA VT6420/VT8237 Disk Driver*** into drive A: and press <Enter>.

4. Depending on your operation system, choose ***VIA Serial ATA RAID Controller(Windows XP)***, ***VIA Serial ATA RAID Controller(Windows 2000)*** or ***VIA Serial ATA RAID Controller(Windows NT4)*** from the list that appears on Windows XP Setup screen, press the <Enter> key.

5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.

6. From the Windows XP Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP installation

➤ **Existing Windows XP Driver Installation**

1. Insert the MSI CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on ***VIA SATA RAID Utility***.
4. The drivers will be automatically installed.

➤ **Confirming Windows XP Driver Installation**

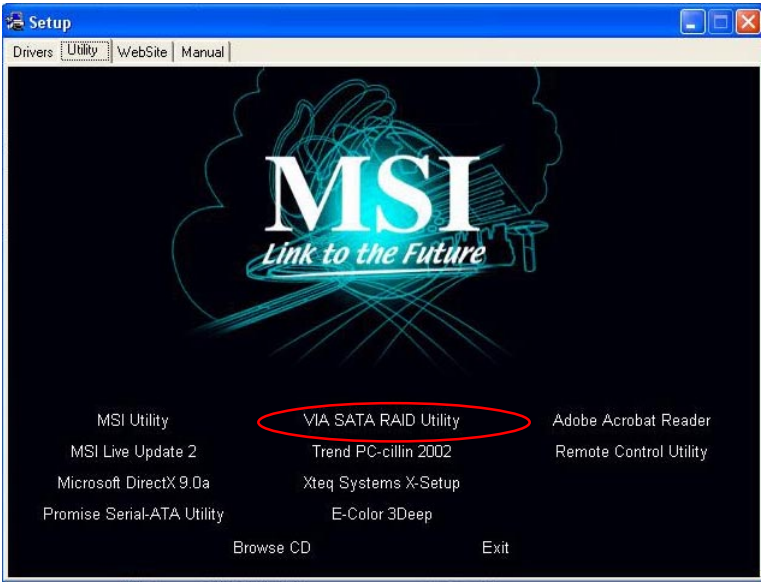
1. From Windows XP, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "+" in front of the **SCSI and RAID Controllers** hardware type. The driver ***VIA IDE RAID Host Controller*** should appear.

Installation of VIA SATA RAID Utility

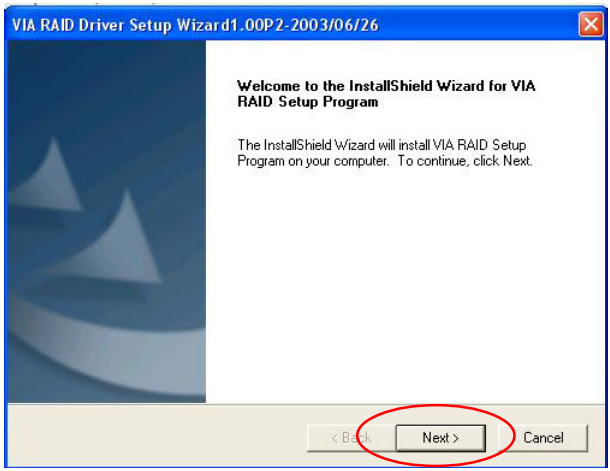
The VIA SATA RAID Utility is the software package that enables high-performance RAID 0 arrays in the Windows* XP operating system. This version of VIA SATA RAID Utility contains the following key features:

- ➤ Serial ATA RAID driver for Windows XP
- ➤ VIA SATA RAID utility
- ➤ RAID0 and RAID1 functions

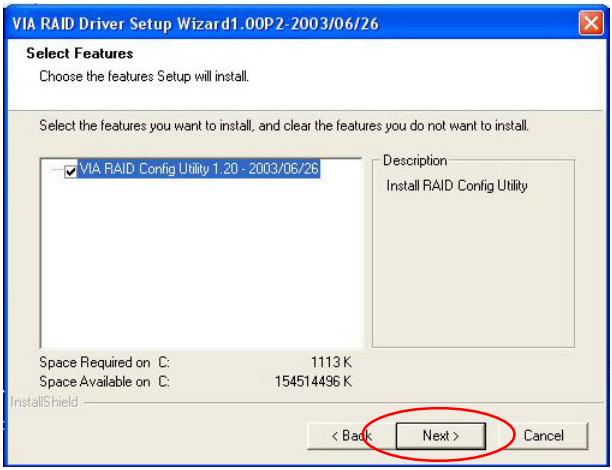
Insert the MSI CD and click on the **VIA SATA RAID Utility** to install the software.



The **InstallShield Wizard** will begin automatically for installation. Click on the **Next** button to proceed the installation in the welcoming window.

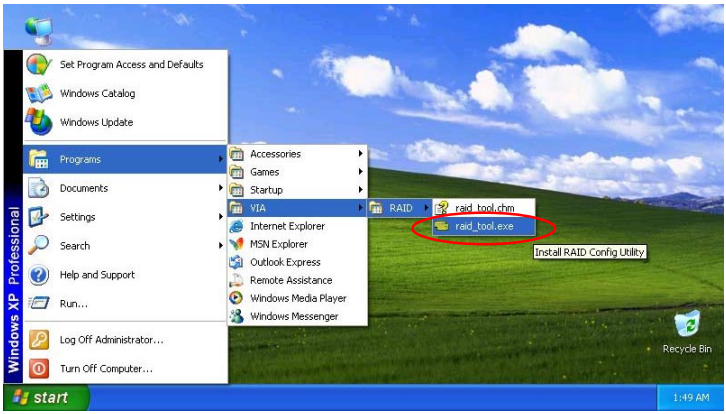

VIA RAID Driver Setup Wizard1.00P2-2003/06/26
Welcome to the InstallShield Wizard for VIA RAID Setup Program
The InstallShield Wizard will install VIA RAID Setup Program on your computer. To continue, click Next.
< Back
Next >
Cancel

Put a check mark in the check box to install the feature you want. Then click **Next** button to proceed the installation.


VIA RAID Driver Setup Wizard1.00P2-2003/06/26
Select Features
Choose the features Setup will install.
Select the features you want to install, and clear the features you do not want to install.
VIA RAID Config Utility 1.20 - 2003/06/26
Description
Install RAID Config Utility
Space Required on C: 1113 K
Space Available on C: 154514496 K
InstallShield
< Back
Next >
Cancel

Using VIA RAID Tool

Once the installation is complete, go to **Start** ---> **Programs** --->**VIA** ---->**raid_tool.exe** to enable **VIA RAID Tool**.



After the software is finished installation, it will automatically started every time Windows is initiated. You may double-click on the icon shown in the system tray of the tool bar to launch the **VIA RAID Tool** utility.

The main interface is divided into two windows and the toolbar above contain the main functions. Click on these toolbar buttons to execute their specific functions. The left windowpane displays the controller and disk drives and the right windowpane displays the details of the controller or disk drives. In KT6 Delta, the available features are as following:

View by Controller

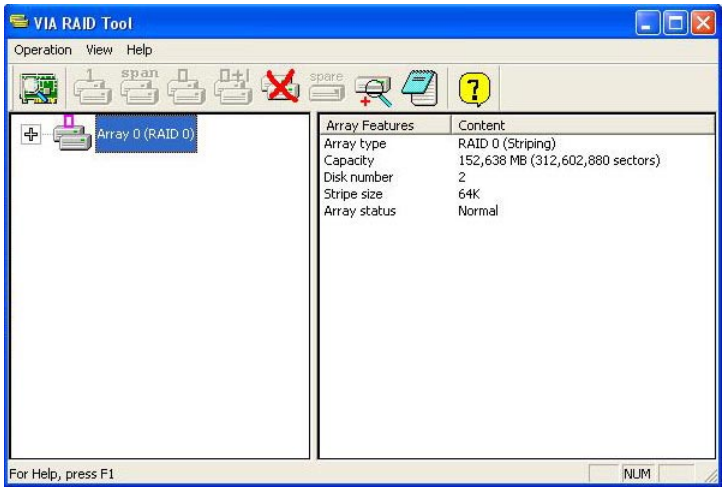
View by Devices

View Event log

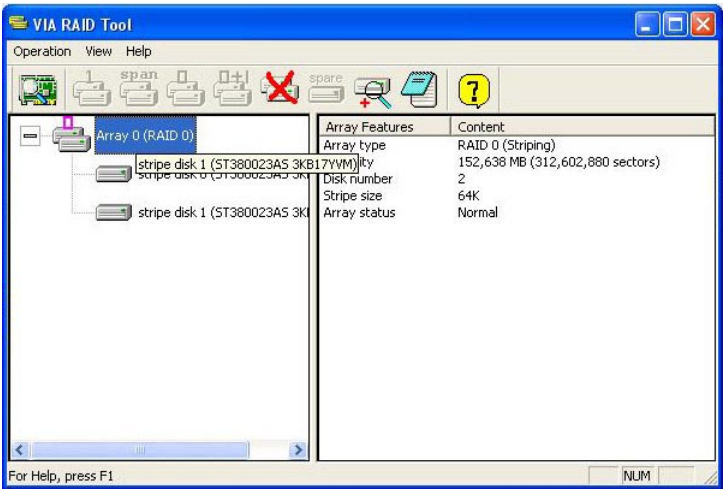
Help Topics

It means that VT8237 SATA RAID in KT6 Delta only has the feature of monitoring the statuses of RAID 0 and RAID 1.

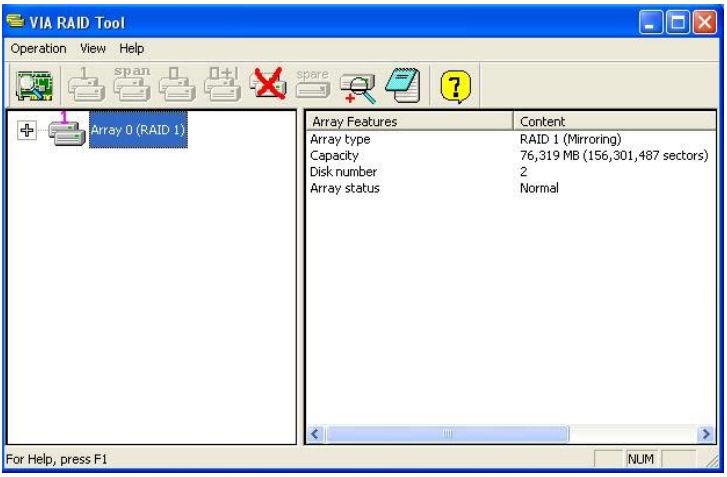
Click on o r button to determine the viewing type of left window pane. There are two viewing types: By controllers and by device. Click on the object in the left window pane to display the status of the object in the right windowpane. The following screen shows the status of Array 0---RAID 0.



Click on the plus (+) symbol next to Array 0---RAID 0 to see the details of each disk.



You may also use the same o r button to view the statuses of Array 0---RAID 1.



Click on the plus (+) symbol next to Array 0---RAID 1 to see the details of each disk.